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ABSTRACT

This document focuses on technologies that can be used to improve federal government services. Reference Point, a foundation based in New Jersey, was chosen by the Office of Technology Assessment of the U.S. Congress to study the application of advanced information. The applications selected for the study were: Electronic Information Clearinghouse, Print-on-demand Document Fulfillment, Public Access Points, Audiotex Services, Smartcard and Electronic Benefit Transfer, Transaction Clearinghouse, Electronic Forms, and Cablecast. A general survey revealed strong interest in the application of new technologies for alternative service deliveries; the most highly rated was the cluster of applications that unified information and offered new means to disseminate it. Convenience, encyclopedic completeness, and timeliness were identified as the key values for all who need access to federal information. Efficiency and the "new and wider" channel of distribution were the key values for the federal agencies. Case studies were conducted on: strategic planning of technology in Social Security administration; electronic benefits transfer technology for food stamps; and public information services in the Consumer Information Center. Findings suggest that electronic service delivery represents both alternatives or replacements to current delivery and new services; government-wide utilities may be more cost-effective than those of individual agencies; federal utilities benefit from the cooperation of state and local government and the private and voluntary sectors; and strategic planning for large-scale service transformations is essential. Recommendations and policy options for Congress are provided. (AEF)

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Innovations for Federal Service

a study of innovative technologies for federal government services to older Americans and consumers

By John Harris, Alan F. Westin, Anne L. Finger

Reference Point Foundation

Prepared for the Office of Technology Assessment

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Reference Point, a 501(c)(3) foundation based in New Jersey, was selected by the Office of Technology Assessment (OTA) of the US Congress to study the application of advanced information technology to improve federal services. Congress is seeking to identify innovations for possible use by the federal government. This study may be distinguished from past studies by OTA, GAO, and others in a most important way. Its focus is not upon the operational or administrative efficiencies, though such efficiencies may be identified. Rather, the emphasis of this study will be placed on uses of technologies *as services in themselves* that may be utilized or applied either to clients directly or to agents who provide such client services (e.g., local social services, public schools, public libraries, etc.) in cooperation with the federal government. Such client services may replace current practices, supplement them, or represent wholly new services.

The applications selected for study were:

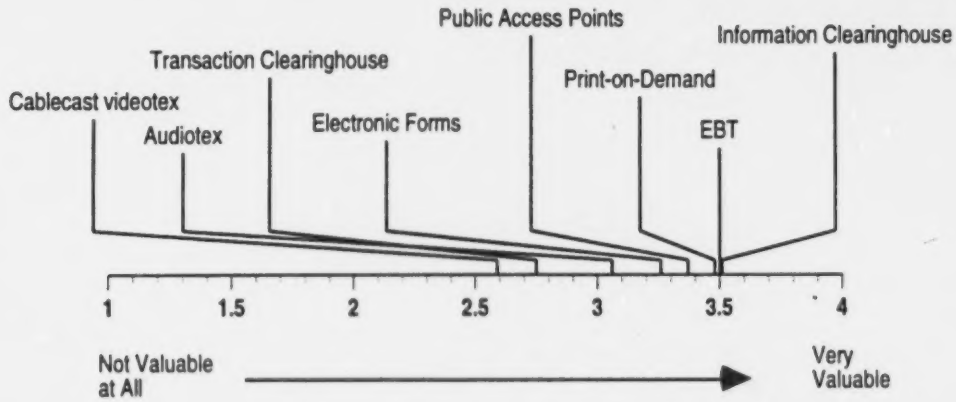
- Electronic Information Clearinghouse
- Print-on-demand Document Fulfillment
- Public Access Points
- Audiotex Services
- Smartcard and Electronic Benefit Transfer
- Transaction Clearinghouse
- Electronic Forms
- Cablecast

A general survey of federal agencies and others was conducted using two similar questionnaires: one applied to services for older Americans; the other applied to services for consumers. Interviews with officials of selected agencies were also made concerning programs for which there is special interest. In addition, the advice and insights of representatives from the voluntary sector and others were gathered through visits and phone interviews; literature in selected technologies was studied; and government reports, internal memoranda, and studies were examined.

Results of General Survey

The survey revealed strong interest in the application of new technologies for alternative service deliveries. Many agencies are actively developing many service concepts engaging such technology. While the private sector often seems to have been the source of the original innovation, the scale and ambition of the federal application make them unique and will profoundly affect the development and application of the technology itself. The result should be

Chart: Average Rating of Innovative Service Concepts by Responding Federal Agencies



new opportunity and examples for the private sector.

A number of interagency efforts promote the use of these technologies for alternative service delivery, though there is no government coordination of the concept. Yet there is a growing clarity to the conceptualization of the alternative services, and some agencies seek to integrate these technologies creatively and comprehensively, recognizing that they involve interrelated capacities and interacting potentials. Increasingly, these technologies are viewed not merely as "aids" to existing services or "tools" of productivity, but as expansions and enhancements of federal services, offering a new quality or new kind of service that is not possible without them.

Of all the technologies, the most highly rated was the cluster of applications that unified information and offered new means to disseminate it. An electronic information clearinghouse with print-on-demand facilities, generally available to all federal agencies, and offering immediate electronic dissemination to "public access points"--especially public libraries--was almost universally valued. It was rated more valuable than audiotex or cablecasting, though these technologies are more familiar and immediately available.

No such clearinghouse or information utility now exists.

Convenience, encyclopedic completeness, and timeliness were identified as the key values for the public (and for all who need access to federal information).

A previous GAO study found that this "clearinghouse"— a point of reference or source of primary citations to federal information resources—was indeed the single most highly prized feature of the promises of information technology. Thirty-eight percent of surveyed associations, and 61% of surveyed libraries, regarded on-line access to such an "index" as useful or greatly useful.

Efficiency and the *new and wider* channel of distribution were the key values for the federal agencies. Agency publication budgets have been greatly affected by policy and fiscal constraints since 1982. Overall, one in four federal publications has been eliminated. Budgets for printing have been widely reduced. As a result, the dissemination of public information has been reduced. As a remedy to this situation, an electronic information clearinghouse may provide a new medium, one that on a transactional basis is nominal in cost yet yields magnitudes of distribution and impressions that current print-and-post media cannot provide.

Case Studies

Social Security Administration: Case Study on Strategic Planning of Technology

Social Security technological development has been governed by strategic planning since 1975. The implementation of these plans has been marred, but in spite of the struggles, the technologies have evolved in a consistent direction. However, the impact upon operations and human resources has been adverse, and technological developments have generally failed to be integrated with operational planning. The latest strategic plan for SSA seeks to redress these shortcomings. It is the first such plan to lead technology by the direction of the agency's service goals.

Food Stamps: Case Study on Electronic Benefits Transfer Technology

Food stamps provide income assistance to 9 to 11 million households; coupons issued for food purchases equal $26 billion per year (at current case rates.) The coupon program, basically unchanged since its inception, is costly to maintain for both the government and those who participate in it—banks that issue and process coupons, retailers that "cash" them, and recipients who must obtain new coupon booklets each month. The use of electronic benefits transfer (EBT) employing magnetic stripe cards and point-of-service terminals at food checkout lines promises to substantially reduce the overall economic costs of food stamps, though there

may be changes and some increases in the direct costs to government administration. A full-scale national implementation of such a program—with the installation of up to 527,000 POS terminals—would increase the number of such terminals over 900% and thereby increase the potential market for POS transactions for the consumer economy as a whole. It represents a national investment in a new electronic credit/debit system, reaching far beyond the food stamp program itself. It represents the opportunity for a public-private partnership that may mutually benefit the consumer economy and federal services.

Consumer Information Center: Case Study on Public Information Services

The Consumer Information Center (CIC) was founded in 1974 by an Executive Order to collect, promote, and disseminate public information literature. Its Pueblo, Colorado fulfillment center is a household name, promoted through well-known public service announcements and 16 million copies of its quarterly catalogs. It disseminates more public-interest free and low-cost publications than any other single agency of government. The service is hampered by its lack of status and the decline of publications for dissemination. In spite of these drawbacks, demand for its services is high. Technological and administrative changes could profoundly increase its capacities. With such changes, the CIC could serve as a complete fulfillment center and coordinator for an electronic public information utility, establishing new partnerships with public libraries and others to promote its products, and adding print-on-demand, electronic catalogs, and expanded inventory.

Findings

- Electronic delivery of public services are an integral and growing part of the Federal government today.
- Innovations are wide-spread; some agencies are aggressively expanding and redefining their services by the application of electronic delivery.
- Demands for efficiencies and cost-savings are driving these innovations and redefinitions, so too are the opportunities of the technology itself, offering options not otherwise available.
- Electronic service delivery represents both alternatives or replacements to current delivery and wholly new services in themselves.

We have also recognized that the large-scale application of electronic delivery suggests that:

- Government-wide utilities may be more cost-effective than those of individual agencies and, in addition to economies of scale, they offer opportunities to coordinate services, even as data and transactions may be coordinated.
- Such large-scale utilities also benefit by the participation and cooperation of state and local government, the private sector and the voluntary sector.

Such partnerships can enhance these and other service delivery plans.

- Especially, we found that an electronic benefit transfer network, a public information clearinghouse, and health/medical information networking all require commitment and cooperation across many agencies to be fully effective and economical, and that they should have dedicated investments and central management.
- Public libraries are integral to public information dissemination.
- Commercial interests are crucial stakeholders in many of these—for example, in the establishment of an EBT network.

Our case studies revealed the value of strategic planning at the agency-level for the successful development of electronic service delivery, but found planning frustrated by government-wide and Congressional policies, and a lack of support.

- Strategic planning for large-scale service transformations is essential, and must be integrated with agency operations, budgets and other plans.
- Transformative strategies run the risk of being technologically driven or driven by paybacks for expected efficiencies; these risks may imperil the agency and the services being devised.
- The application of transformative service delivery should be conceived within the framework of the totality of service delivery, so that its value to the client and its relation to the total system of services drives its design, implementation and management; else wise, it risks being concocted in isolation and may be contrary to other services and expectations.
- The effects of technology and the changed work processes upon workers and work places must be assessed in advance; the costs of the "human factors" and employee relations must be underwritten in the original plan and carried forth as a requirement of business. More often these are neglected or deferred and then become more costly to accommodate afterward.

Conclusions

We must shape our technologies to answer the question of effective, efficient and quality public service fully, not to respond to some narrow immediacy. Technologies that are employed merely to perform tasks will yield incoherent segmented systems; they will tend to give us machines that are niched into the organization and become a dependent thing , or a surrogate for the service they were supposed to enhance, not replace. Hence, a voice mail system becomes the inhuman receptionist for a federal agency. A telephone service justifies the closing of field offices. A computer-readable database replaces a publication. An electronic processing system gives preferential resources to those entitlements that it can rapidly complete without pause, creating backlogs of the exceptions, which may remain neglected.

Technology must be strategically planned on the basis of an agency mission and the core values of its public service

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The impetus for technological improvement in the past, found in this study as well, has been the objective of productivity—often to avoid labor costs, rather than to redeploy the labor saved to improve service delivery. Technologies have failed to redefine service delivery because they have not been applied for that purpose. To realize that potential, the agency must reconceive its service delivery, as if it were starting up its activities for the first time. Moreover, it must redefine the outcomes and measures of its mission and bring new technologies to bear upon them creatively.

To achieve the maximum benefit and maximum efficiency from systems for new Federal services, the systems should be developed as government-wide investments and infrastructure.

The major systems proposed for changing the delivery of federal service—a national public information resource; networks for the electronic transaction of income maintenance; networks of health and medical care—are too large and too costly for any single agency to develop and sustain, or even to justify on the basis of its particular mission. At best, an agency may promote a climate for their development while exploiting narrow applications. But the benefits of mature systems, the real benefits of the technology as it is envisioned, require a global implementation—across agency jurisdictions, mixing the values and orientations of different programs and constituencies.

To effectively deliver federal services, the government must engage the resources of the private and voluntary sectors.

The major systems that are proposed will depend upon the participation and

cooperation of the private and voluntary sectors. Any national public information resource must depend upon the public libraries. Any national network of electronic income maintenance must engage financial and retail businesses in a mutually beneficial strategy. Any national network of medical and health information must support and unify the provider and carrier communities and must seek their joint investment in it.

Recommendations to Congress

Based on these findings and the specific conclusions found throughout this report, we believe that a Congressional policy on electronic service delivery should be developed that seeks to encourage and promote innovations and the redefinition of service delivery by several concrete steps:

☑ **Model, pilot and establish such central facilities and utilities as would promote electronic delivery.** Such should include but not be to an EBT/EFT network for government -wide application, a public information clearinghouse, and health care networking applications; such facilities and utilities may require the establishment of new federal agencies to execute these missions, as in the case of EBT, or may require reorganization of existing agencies and activities.

In this regard we specifically recommend:

- **The Consumer Information Center should be established as an independent Federal agency and its mission expressly expanded to include electronic dissemination.**
- **A Commission for Electronic Benefit Transfer (EBT) and Electronic Fund Transfer (EFT) should be established to promote and integrate such functions for government-wide service.**

☑ **Establish a technology laboratory for electronic delivery services, and other innovations in the application of telecommunications and information technology.** The laboratory is established to test and evaluate applications for federal agencies and state and local government, on a reimbursable basis, and conduct independent research and experiments with such technologies, and serve as a technical resource and clearinghouse to federal agencies; such a laboratory may be established as quasi-public corporation, with joint interests and investments of technological industries, dedicated to interpersonal technologies which may have commercial as well as public-interest value.

☑ **Establish a unified planning process for federal agencies.** This should require the integration of existing statutory planning processes (such as budgets, information and resource management, and others), and requiring that such plans incorporate service delivery plans; such unified plans to be submitted annually to the Congress in conjunction with annual requests for appropriations

In establishing a technology laboratory or other common facilities and utilities, as described above, the Congress is extending the direction it has undertaken with the authorization of the NREN, and its predecessor NSFnet. These are each examples of investments which have commercial as well as public benefits.

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Introduction

Reference Point, a 501(c)(3) foundation based in New Jersey, was selected by the Office of Technology Assessment (OTA) of the US Congress to provide two studies on the application of advanced information technology to improve federal services:

- services for older Americans; and
- services for consumers.

These studies are among several explorations of innovative applications of telecommunications and computer technologies that have been commissioned by OTA as part of a broad project—*Federal Telecommunications For The 21st Century: Transforming The Delivery Of Government Service*—undertaken at the behest of Congress. Congress is seeking to identify innovations for possible use by the federal government. The effort will culminate in a formal report and recommendations to Congress.

These studies may be distinguished from past studies by OTA, GAO, and others in a most important way. Their focus is not upon the operational or administrative efficiencies, though such efficiencies may be identified. Rather, the emphasis of these studies will be placed on uses of technologies *as services in themselves* that may be utilized or applied either to clients directly or to agents who provide such client services (e.g., local social services, public schools, public libraries, etc.) in cooperation with the federal government. Such client services may replace current practices, supplement them, or represent wholly new services.

Scope of Studies and This Report

Because the technologies, issues of public service, and other matters covered in the two studies Reference Point conducted overlapped to a large extent, this report is a synthesis of both studies. While the report addresses some specific concerns—for older Americans on the one hand, and for consumers on the other—the major findings and conclusions may be generalized to both constituencies.

From the Project Description of OTA:

"The Federal Government provides services directly/indirectly to almost all U.S. citizens. And it is the largest user of telecommunications and computing technologies in the world. Yet the government lacks a clear vision—some would say any vision—of the future government service delivery in an electronic age. Technology now allows citizens to directly access government services via computer networks, videoconferences, and interactive television or touch-tone telephone. Rural residents, senior citizens, students, and the disabled could receive government services by electronic means as easily as those served in person."

"Electronic technologies might reduce the need for some layers of bureaucracy, help bring government services more directly to citizens, and, by so doing, provide better services more cheaply. Telecommuting and electronic networking might reduce expensive, stressful, polluting commutes for Federal employees and point the way toward more energy efficient and environmentally responsible work and organizational structures.

"This project would focus on the potential to enhance the productivity of providing Federal government services through telecommunications and computer networks, and to improve the efficiency of government operations through telecommuting, teleconferencing, and training via telecommunications and video media. The study would draw on related experience of State/local and foreign governments and the private sector. The project would use case studies and site visits to explore the potential for electronic delivery of a cross-section of government services. It would examine the implications for Federal policies on telecommunications, information resources management and planning, organizational development, computer networks and standards, energy/environmental management, and employee training and education."

Study of Federal Services for Older Americans

This study examined a small number of specific federal services/programs that are relevant to older Americans and are currently or potentially suitable for electronic delivery.

Those services/ programs selected for study are:

- Medicare claims processing
- Information and Referral (I&R) services
- Entitlement programs of Social Security

- Other income maintenance programs that are federally funded but locally administered (e.g., food stamps)
- Legal aid services

The study examined those existing programs and analyzed a select number of specific technology applications currently or potentially suitable for electronic delivery of the selected services to older Americans.

The applications selected for study were:

- Information Clearinghouse
- Print-on-demand Document Fulfillment
- Public Access Points
- Audiotex Services
- Smartcard and Electronic Benefit Transfer
- Transaction Clearinghouse

Study of Federal Services for Consumers

Services and programs selected for study were:

- Department of Transportation (DOT) audiotex and other consumer education services
- Consumer Information Center
- Federal Trade Commission (FTC) enforcement and public education programs
- Food and Drug Administration (FDA) and USDA Food Safety and Inspection Service (FSIS) notification and public education services
- Consumer Product Safety Commission (CPSC) notification and public education programs
- Environmental Protection Agency (EPA) consumer affairs
- product safety and standards compliance (FDA, DOT, and others)

The applications selected for study were:

- Information Clearinghouse
- Print-on-demand Document Fulfillment
- Public Access Points
- Audiotex Services
- Electronic Forms
- Cablecast

Criteria to Evaluate Technology-Enhanced Applications

The study sought to examine the selected technology-enhanced applications against the following criteria:

- Recipient needs and desires for electronic service
- Quality and cost of electronic service delivery
- Opportunities for improvement in the productivity and efficiency of service delivery
- Provider (both service and information providers) and user (both client and client-agent) acceptance of electronic delivery
- Requirements for education, training, equipping of providers and users
- Requirements for telecommunication and computing infrastructure needed to support electronic delivery (including technical standards)

Implications of Policy and Management

The study sought to assess the extent to which these service applications have been or could be implemented and examined such policy and management considerations as:

- Equity of electronic access to federal services
- Protection of recipient privacy in federal record systems
- Prevention and detection of fraud, waste, and abuse in program management and service delivery
- Appropriate retention and archiving of records and information related to electronic delivery
- Consistency and application to annual and five-year agency planning for telecommunications and information resource management
- Relationship to agency automation programs and activities

- Relationship to FTS2000, NREN, and other federal information programs
- Opportunities presented by electronic service delivery for synergy/economies of scale across federal agencies/ programs, across federal/state/local levels of government
- Opportunities for cooperation with the private sector
- Implications for the federal work force and organization.

Methodology

The methodologies for these studies were conjoined. A general survey of federal agencies and others was conducted using two similar questionnaires: one applied to services for older Americans; the other applied to services for consumers. The instruments were identical except with respect to two special applications that were unique to each program area. A total of 159 general surveys (124 directed to consumer programs; 35 directed to older American programs) were mailed out on October 2, 1992, to federal agency officials, state consumer agency officials, and representatives of nonprofit agencies; five additional surveys were handed to federal agency officials in the course of interviews. Each survey packet included a cover letter, a description of the OTA project, and a return envelope.

A total of 58 questionnaires were returned, or about one-third of those mailed. The survey was not intended to be representative; it sought only to explore a cross-section of opinions from relevant individuals in government agencies and nonprofit organizations.

Interviews with officials of selected agencies were also made concerning programs for which there is special interest. In addition, the advice and insights of representatives from the voluntary sector and others were gathered through visits and phone interviews; literature in selected technologies was studied; and government reports, internal memoranda, and studies were examined.

This report contains an examination of the results of the general survey and the associated interviews and research, as well as detailed case studies of individual agencies or programs that currently incorporate some of the technologies or services that are central to these studies.

Results of General Survey

The survey and interviews with federal agencies focused on eight service concepts as examples of the application of information technology. Some of these represent current innovations; others are untried.

Information Clearinghouse—This is a service concept for public information dissemination for federal agencies broadly—those serving older Americans, consumers, and others. It may also assist those organizations and state/local agencies serving these constituencies. A federal source may use the Clearinghouse to distribute any public literature or information via on-line services and other electronic output. Inquirers may access these by computers and other means. In addition to providing a central directory and online access to information, the Clearinghouse should also be a means for rapid and cost-effective ordering of pamphlets and other materials. It may be used to expand recent projects to develop national directories to services and programs for seniors. The service should be available for public access in places such as public libraries, where citizens could use terminals or receive assistance from librarians to get the information they need. (See also service concept for Public Access Points and Print-on-Demand below.)

A primary beneficiary of these on-line resources of services for older Americans would be the several thousand senior citizen centers that receive federal funds for their activities, many hundreds of area agencies on aging, the 70,000 information and referral (I&R) agencies, as well as the many voluntary sector organizations that serve seniors. The Clearinghouse could, in turn, be

an important resource of their services to seniors, and would promote the current partnerships between federal agencies and these other organizations. Such an on-line resource may also be employed by the Social Security Administration, whose representatives routinely provide referral and other information to older and disabled Americans, by mandate of Executive Order. Currently SSA does not maintain or develop resources to help them perform this function; local offices must depend upon other services for information resources or may have none.

Public Access Points—Because many of the advanced technologies are not available in large numbers of consumer homes, there should be means to use them in public places as public services. Such "public access points" may employ many types of technologies (some more "friendly" than others). One may be an electronic information "kiosk" where the person uses a touch-screen terminal to access menus and items, or where video is displayed, or both. For example, in a supermarket a "kiosk" might be used to display product recalls and health and nutrition information. Or, a person visiting a senior citizen center or a Social Security office may find a "kiosk" that describes community services for seniors or provides general information about entitlement programs and other assistance. Alternatively, public computer terminals may be available in such places as public libraries. These terminals or kiosks may be *on-line* (capable of communicating with federal agencies by electronic messages or providing a means for older Americans to make mail orders), or they may be *off-line* and meant largely for education and information. Such *public access points*, when connected to a central or distributed database, can offer reference information and on-line guidance directly to the public or with the assistance of others (such as librarians). Interactive services could include transactions such as notification of changes of address.

Print-on-demand Document Fulfillment—The sheer volume of federal information makes publishing, archiving, and disseminating literature too costly and inefficient wholly by traditional means. However, using high-speed laser printers that access huge electronic repositories, like the Clearinghouse described above, the federal government could provide printed copies of information on demand. Linked to mail-order fulfillment centers like those the federal government now employs, the result could be a more responsive and comprehensive publications service—one in which the information is as current as possible because it can be kept up-to-date electronically without incurring excessive publishing costs. This print-on-demand technology also expands the capacity of federal agencies to provide printed documents that they can not presently afford to publish. It can turn virtually any electronic file (text or image) into an instant publication.

Audiotex Services—Some federal agencies already use audiotex for services, including simple recorded messages and voice response systems where the caller can leave a message, such as a name and address or phone number for some response. How effective are these? Should the federal government use 900 telephone number technology to provide a way for older Americans (or those who serve them) to order pamphlets and other literature they need? Or use 900 telephone numbers to pay user fees or other assessments for federal services (for example, senior citizen passes to national parks)? Should the agencies use other advanced technologies, such as caller-ID, which can automate mail order fulfillment and other transactions such as complaints and reporting? Callers can signal the federal agency they are calling from their personal phone and automatically route a response to their listed address.

Two service concepts were included only in the survey of services for older Americans:

Smartcard and Electronic Benefit Transfer—The use of Smartcards is now under consideration by the Department of Health and Human Services for Medicare and Medicaid recipients. The card would contain personal information about the recipient; the

amount and kind of information are still being discussed. It could contain medical history information in addition to identification. Accordingly, the card could be used to shortcut paperwork in the intake, treatment, and billing of the patient. Such information could help prevent errors in medical treatment because of shortcomings in available medical information and substantially reduce the costs and inefficiencies of medical and billing records.

Similar cards might be used to provide Supplemental Security Income, food stamps, or other cash-value benefits, which the recipient might use at an ATM or point-of-sale device for purchases. Because it is "smart," the card could keep track of how many dollars had been spent from the card that month and how much remained; the recipient would get that information by a readout on the card similar to the LCD on a calculator. Trials for use of smartcards and, more commonly, the use of "bank cards" for electronic benefit transfer have been conducted or are now under way in several programs.

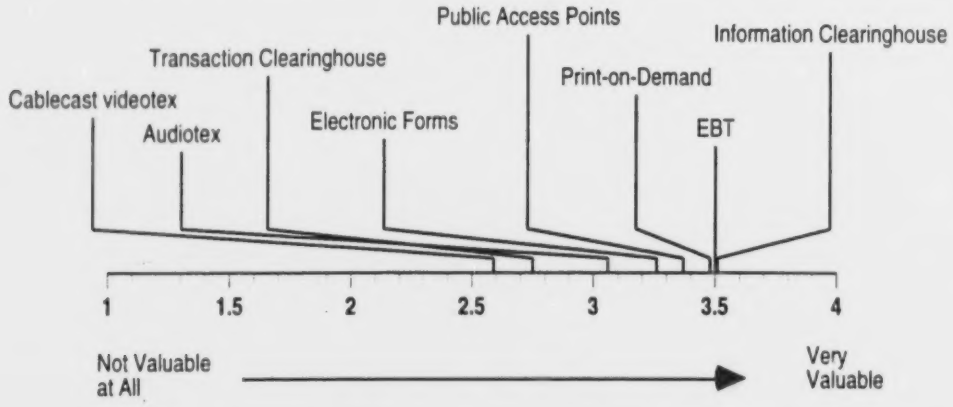
Transaction Clearinghouse —This would be an interagency cooperative processing repository permitting a common venue where clients could report changes in their status. While massive data exchanges and data sharing systems exist (such as the SDX and the IRS and SSA tape exchanges), there is no interactive real-time interagency exchange *at the service of clients*. As a result, clients who are recipients of many federal services (or state-administered federal programs such as Medicaid) must report changes in their status to each administrative office individually. Such a service might be made available by a single 800 phone number, or it might be initiated by an agency on behalf of the client who reported the change. While such a clearinghouse could be convenient to clients and could also reduce losses due to overpayment of benefits or incorrectly addressed payments, the clearinghouse would need to safeguard against the transmission of incorrect information about clients.

Two service concepts were included only in the survey of consumer services:

Electronic Forms—Electronic media have been used for reports and mandatory filings of payroll and tax data and some other reporting. The growing use of personal computers makes electronic forms a feasible alternate to paper. For example, a federal agency might distribute a routine periodic report to regulated businesses on disk or by online file transfer. Conceivably, such systems would save data and paper processing costs for both businesses and the federal agencies. To be most effective, such electronic forms should be mandatory.

Cablecast Videotext—Currently, product recall notices are disseminated for cable TV viewing, typically displayed as a brief message on public access channels. While this subject was explored in the general survey, no case study of its application was conducted.

Chart 1 Rating of Select Service Concepts by Responding Federal Agencies



General Findings

The survey reveals strong interest in the application of new technologies for alternative service deliveries. Many agencies are actively developing many service concepts engaging such technology. While the private sector often seems to have been the source of the original innovation, the scale and ambition of the federal application make them unique and will profoundly affect the development and application of the technology itself. The result should be new opportunity and examples for the private sector.

A number of interagency efforts promote the use of these technologies for alternative service delivery, though there is no government coordination of the concept. Yet there is a growing clarity to the conceptualization of the alternative services, and some agencies seek to integrate these technologies creatively and comprehensively, recognizing that they involve interrelated capacities and interacting potentials. Increasingly, these technologies are viewed not merely as "aids" to existing services or "tools" of productivity, but as expansions and enhancements of federal services, offering a new quality or new kind of service that is not possible without them.

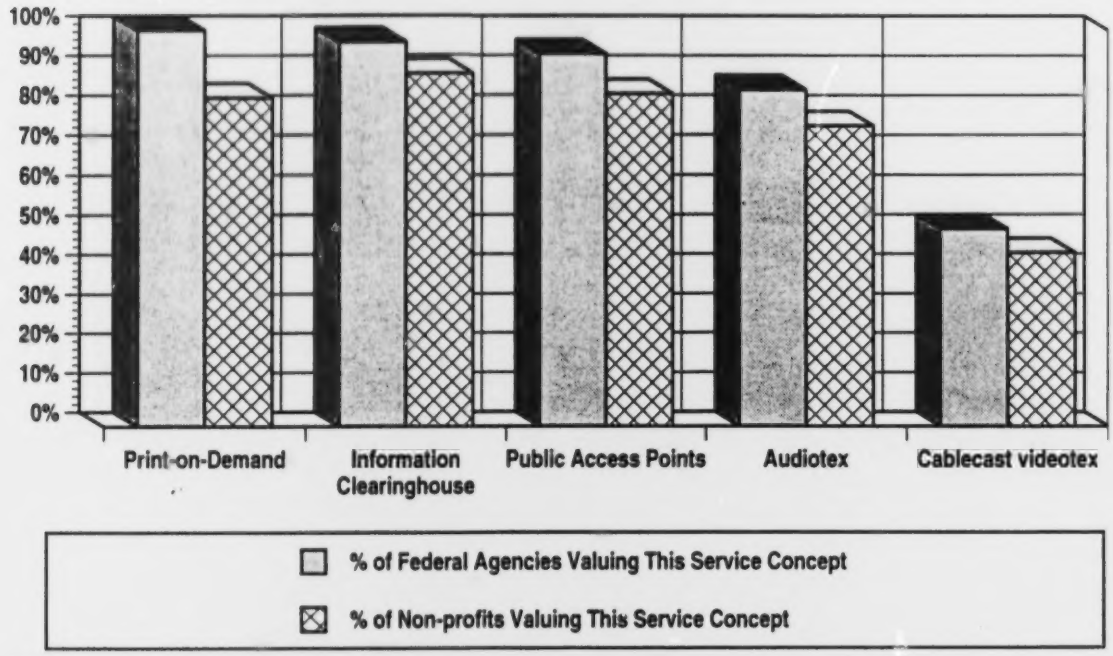
Rating the Value of Alternative Services

Federal agencies and other respondents to the survey questionnaire were asked to assess the value of these services and to comment on both the value and the problems and issues the application might introduce. This section explores the significance of overall ratings. Details of the responses are described subsequently.

These alternative client services may be grouped into two general sets. One set includes the information clearinghouse, the public access points that communicate with it, the print-on-demand fulfillment that utilizes its resource, cablecasting, and audiotex. The focus is on public information as a service and as a programmatic objective. As a *service*, public information may involve disclosure (the right to know and the rule to inform—"sunshine" or public notices); outreach (the promotion of government services and programs); or knowledge (the communication of public data for its own sake).

As a *program*, public information may have an educational purpose, such as to change behavior and thereby effect some economic or social goal. Some examples are recall notices that are intended to safeguard the

**Chart 2 Percentage of All Respondents
That Rated These Service Concepts Valuable or Very Valuable
(n=35—Federal; n=18—nonprofits)**



consumer and redress an economic wrong; federal disease prevention and health promotion programs that specifically depend upon education by public information; and, increasingly, regulatory enforcement depends upon "voluntary" programs where the "self-education" of the regulated entity is the critical factor for compliance.

The second set of alternative client services includes the transaction clearinghouse, smartcard or electronic benefit transfer, electronic forms, and audiotex as an interactive service. Their focus is on direct delivery of program values.

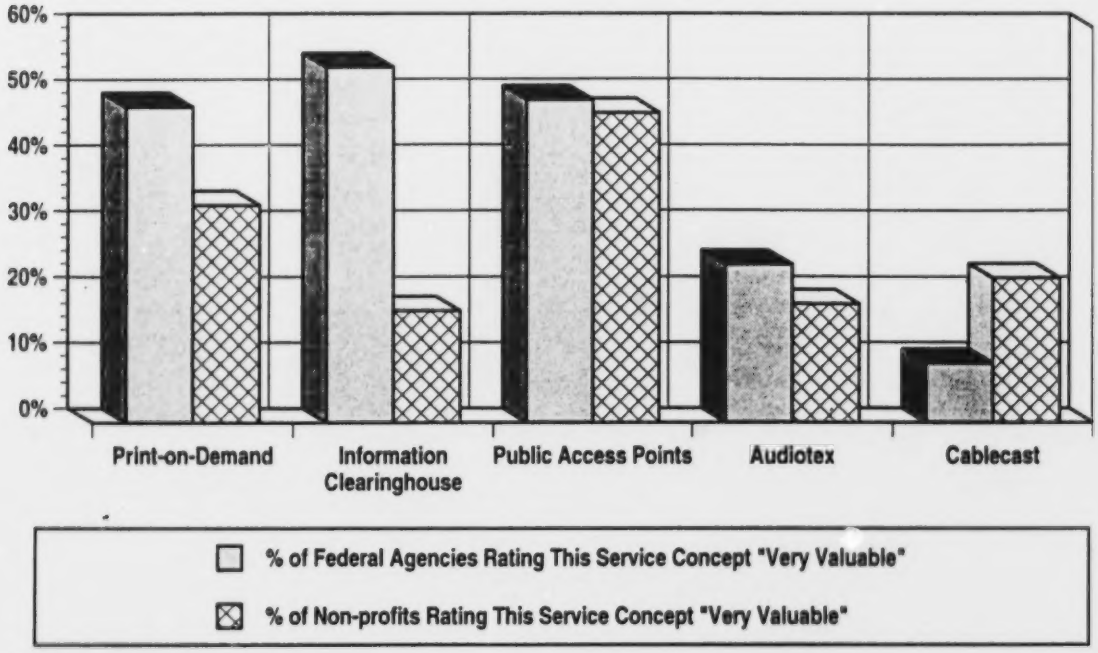
In evaluating how the agencies viewed these different service concepts, it is important to keep in mind the way that the concepts are applied to different service objectives.

The agencies valued the public information utility most highly among the technologies discussed. For some, it was also an important mechanism for educational goals.

Of all the technologies, the most highly rated was the cluster of applications that unified information and offered new means to disseminate it. An information clearinghouse with print-on-demand facilities, generally available to all federal agencies, and offering immediate electronic dissemination to "public access points"—especially public libraries—was almost universally valued. It was rated more valuable than audiotex or cablecasting, though these technologies are more familiar and immediately available.

No such clearinghouse or information utility now exists. The Government Printing Office (GPO) maintains programs for sales of publications that constitute a small percentage of all public information. Even the larger mission of the Depository Library

Chart 3 Percentage of All Respondents
That Rated These Service Concepts *Very Valuable*
(n=35—Federal; n=18—nonprofits)



Program (also maintained by GPO) does not result in the dissemination of the kind and value of information that is associated with the broad purposes of public information. The National Technical Information Service (NTIS) of the Commerce Department maintains a program of archives and sales of select government documents. It is a clearinghouse of great magnitude—holding more than two million titles. However, it is by design a highly specialized collection, not one of general public interest.[1]

Only the Consumer Information Center (CIC) may be described as a government-wide clearinghouse whose mission is to disseminate public information freely and widely to the general public. But it currently lacks the capacity needed for government-wide electronic dissemination. A case study within this report examines the CIC's role in public information dissemination, discusses the requirements of an electronic clearinghouse utility for public information more fully, and shows how these requirements relate to some current initiatives of the CIC, GPO, and NTIS.

Without such a utility, agencies may disseminate electronically by their own devices. In fact, we estimate there are now more than 10,000 electronic products offered for public use by federal agencies. Many agencies employ bulletin boards in which documents may be disseminated, although these are not widely known or well-promoted, even among those who use BBS services regularly; a current database of Washington-area BBS's (updated November, 1992) lists only three Federal government systems among 621 that are available publicly. In October, 1992, the Small Business Administration (SBA) announced that it will provide dial-up access to a BBS

[1] See OTA report Informing the Nation for more discussion of GPO and NTIS mission and capacities.

that also provides "fax-back" capacities, that is, an order fulfillment mechanism that permits callers by fax or other means to request delivery of a file by fax. Such applications are increasing but remain in the minority and largely itinerant. [See below the current uses of technologies reported by federal agencies in the survey.]

Among those who use electronic dissemination extensively for consumer information are the Environmental Protection Agency and the Department of Agriculture. Interestingly, the primary agencies popularly associated with consumer information—the Federal Trade Commission, the Food and Drug Administration, the Consumer Product Safety Commission—use electronic dissemination only to a limited extent.

Such efforts—though effective in targeting specific audiences—are not effective for broad public access or widespread dissemination. Indeed, the proliferation of such electronic products and services is becoming a burden upon a public that cannot know where to find what it seeks.

Information Clearinghouse — Views and Issues

The service concept of an information clearinghouse embraces two potential services: a repository for documents; and an electronic exchange for mail, messages, discussions, and transactions.

The clearinghouse should be considered in conjunction with other electronic public information mechanisms. While it may be accessed by an on-line connection via a modem, it also provides an electronic utility for processing files and messages that may be accessed by audiotex systems, or a library for disseminating documents using the "print-on-demand" technology.

When combined with a "public access point," the Clearinghouse becomes a utility to update or link remote terminals. Such terminals may be "kiosks" that the public uses by touch screen—or personal computers in public libraries or other places that the public may use directly or with assistance.

Some of the key values of such a clearinghouse are expressed by this sample of comments from those surveyed:

- "Cheap easy distribution of library publications."
  —Federal Agency
- "The clearinghouse would improve access to information, and speed the availability of information."
  —Federal Agency
- "One-stop shopping concept for information."
  —Federal Agency
- "Makes more people aware of the variety of information available and allows them easy access to it."
  —Nonprofit Organization
- "Reduces paperwork."
  —Federal Agency
- "Those specifically involved in state & local administration (governments, advocates, etc.....) would benefit from more timely access to information."
  —Federal Agency
- "Savings in terms of time and number of people who have to handle requests for information."
  —Federal Agency
- "Immediate access; elimination of bureaucracy; streamlining and increasing efficiency."
  —Federal Agency
- "One central location for all government documents."
  —Federal Agency
- "I think this is a great idea. I hear from so many seniors who don't know where to begin to look in the aging network."
  —Nonprofit Organization

Convenience, encyclopedic completeness, and timeliness were identified as the key values for the public (and for all who need access to federal information). A previous GAO study found that this "clearinghouse"— a point of reference or source of primary citations to federal information resources—was indeed the single most highly prized feature of the promises of information technology. Thirty-eight percent of surveyed associations, and 61% of surveyed libraries, regarded on-line access to such an "index" as useful or greatly useful.[1]

Efficiency and the *new and wider* channel of distribution were the key values for the federal agencies. Agency publication budgets have been greatly affected by policy and fiscal constraints since 1982. Overall, one in four federal publications has been eliminated.[2] Budgets for printing have been widely reduced. As a result, the dissemination of public information has been reduced. As a remedy to this situation, an information clearinghouse may provide a new medium, one that on a transactional basis is nominal in cost yet yields magnitudes of distribution and impressions that current print-and-post media cannot provide.

Some nonprofits that were surveyed asked if such a service might also be made available to them so that they might improve dissemination of their public information. That such a utility might be truly public—a public carrier and exchange for public information—provides another dimension to the service concept, and a different set of challenges, costs ,and policy issues. One nonprofit suggested that it would trouble them if such a utility were used by their "opposition," referring to those who opposed their views. Conversely, those who value such a utility also expressed the deep concern that it might be "controlled" by a particular viewpoint or intrude upon the privacy or confidentiality of messaging between citizens and their government. Unless such a utility is apolitical and incorporates constitutional protections for speech, publication, and privacy, it will undermine the public trust in it. If such a utility is available only for federal agency providers and is secure for private transactions between them and citizens, these issues may be considered resolved or redressable by existing policy and statute. But, if such a utility should be publicly available—if, for example, an *interactive* federal clearinghouse might be made available as an Internet resource—legislation may be required to ensure protection of these principles.

The respondents also expressed concern that such a clearinghouse would be burdened by problems of administration and management, as this sample of comments illustrates:

- "Problems?? If run by federal government (GPO), plenty! It might work if put out on private vendor contract."
  —Federal Agency

- "[Problem with]... keeping up with demand. Need to reallocate staff to maintain the service."
  —Federal Agency

- "Difficulty in maintaining same level of data currency at remote libraries."
  —Federal Agency

- "[Problem with]... keeping the system up to date."
  —Federal Agency

- "[Problem with]... Maintenance of centralized directory. Problem of update will overwhelm central authority."
  —Federal Agency

- "[Problem with]... A fee structure that might inhibit use."
  —Federal Agency

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[1] *Federal Information: Users' Current and Future Technology Needs*, GAO, 1988.

[2] "Less Access to Information By and About the US Government", a bulletin of the American Library Association (Washington Office), June, 1992.

- "Older and illiterate consumers, or consumers with English as a second language may have trouble accessing the information."
  —Nonprofit Organization

- "Low ownership of computers by consumers. Who will fund purchase of terminals in libraries?"
  —Federal Agency

- "Many members, especially seniors, are not and will not become computer capable and may not benefit except through pamphlets and traditional means of communication. However, better communications will help us to disseminate information most effectively to most of our membership —Currently our consumers would need us to point the way to Clearinghouse Center Directory."
  —Nonprofit Organization

- "Cost!!!"
  —Federal Agency

- "[Problem with]... Communication speed, conflicting protocols, high cost for individual users, need to have paper copy."
  —Federal Agency

- "[Problem with]... Handicaps - language, eyes.....Lots of money for computers; Is it the best use of money?"
  —Nonprofit Organization

- "Seniors are resistant to new technologies —especially those most in need of services—low income, non-English speaking, recent immigrants, etc."
  —Nonprofit Organization

- "Cost, low literacy among many users, gathering information from so many scattered sources."
  —Nonprofit Organization

- "[Problem with]... making the system sufficiently user-friendly."
  —Federal Agency

- "The organization and management of the data and system for gathering, promoting and providing convenient access."
  —Federal Agency

- "Central directory is good, but as tried by GSA's 'information centers,' it's a flop."
  —Federal Agency

- "Need to implement in distributed manner. Do not want/need all information in a single directory. Use pointers to locate information."
  —Federal Agency

- "Developing directories of information/data resources is extremely difficult since good bibliographic/data reference material is scarce. Our agency is doing a data directory now, and from bitter experience we know that a comprehensive inventory of information/data resources (the tangible books, reports, databases, computer files, etc....) is absolutely essential before a concept based directory can be built.."
  —Federal Agency

These comments represent issues that must be systematically addressed in any serious design and implementation of the service concept of an electronic information clearinghouse. They should be viewed not as impediments to the concept, but as systems requirements that must be incorporated into the design.

The following chart summarizes the primary issues.

Table 1 Requirements for Government-wide Information Clearinghouse Utility

Requirement	Potential Solution
low-cost access	use of the FTS network, Internet, or NREN
off-line as well as on-line access to facilitate the widest possible accessibility	coordinate with other Federal clearinghouse functions, especially the Consumer Information Center
advanced library and information management systems	employ and refine existing bibliographic standards, and engage the cooperation of current networks and libraries within the Federal government and outside it

The major issue concerning such a central service is which agency would manage it. None now has the facilities and the full range of expertise to fulfill the requirements. It may be preferable to use the model of cooperative networks[1] and provide for a number of interlinked "clearinghouses," each with a distinct mission. Thus, one maintained by GPO might handle the government publication sales program. Another, maintained by NTIS, would serve its traditional mission. A third, maintained by the CIC, might be the repository and clearinghouse for low-cost and free public information literature. By sharing or linking directory or bibliographic resources (employing a common architectural standard for them), each clearinghouse would facilitate the use of the others, although the unique purpose, policies, fees, and costs of each may be independently retained. This concept is further examined in the case study on the CIC.

Directories, as an information resource, also represent a challenge to any central or coordinated information utility. They are typically developed and managed by a viewpoint that is oriented to a particular use. Thus, a phone directory may keep listings of numbers but be incomplete as a listing of services or programs; conversely, a database of services might not have the most recent telephone numbers. Moreover, since such resources have developed, the range of systems and software has proliferated and resulted in many incompatibilities. Even if mapping of data structures or accommodation to acceptable standards is made, the integrity of data itself is a problem. Although two records may refer to the same entity, they may not be matched automatically because of uncertainty as to their validity. In library science, this difficulty is known as a problem of authority: the same author may be referred to by a variation of the name or the style of presentation.

Notwithstanding these limitations, the compilation of available directories and bibliographic resources must be a first priority, and care must be taken to ensure that data collection efforts are not duplicated. One nonprofit organization reminded us that "The Administration on Aging supports a program entitled *Elder Care Locator Services*, which is a nationwide on-line informational and referral database of services. [The Clearinghouse] would be a duplication of the existing program to some degree." However, such existing resources do not have the wide availability or promotion that a unitary clearinghouse or program

[1] The model for cooperative networks was advanced by the authors in its previous report to OTA for this project, evaluating non-profit exemplars in the use of information and telecommunications technologies.

would provide; its interconnection to other resources would further enhance its value.

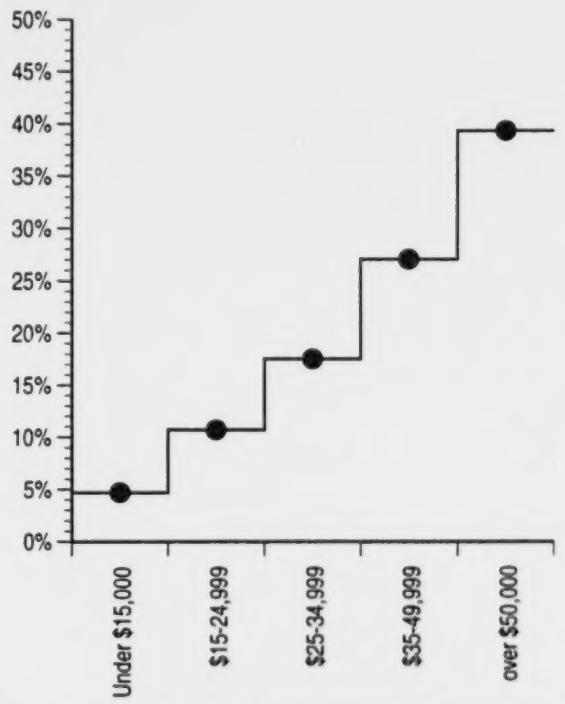
Accessibility of an Information Clearinghouse—Inequities in the Information Age

Nonprofits working as intermediaries for federal services, state and local government, and other organizations that disseminate public information are ready to use such an on-line information clearinghouse, and our survey demonstrates high interest in the concept and a sense that it would have high value. However, for citizens themselves, such an on-line clearinghouse may not be a good delivery system at this time. A preeminent concern of nonprofits and federal agencies alike is the question of public on-line accessibility.

Opinion divides upon the usefulness of on-line information systems. No matter how "user friendly," on-line services have a relatively narrow audience. The Census Bureau's 1989 survey of computer use in the United States found just 15% of households with computers, available to about 29.1 million adults, only about half of whom actually used them. Only 3% of the households have modems for their computers, available to some 6.7 million adults. Under 1% of the households, or less than two million adults, actually use those modems for BBS access or E-mail from their homes. Commercial firms (Prodigy, America Online, CompuServe, Genie), claim as many as 2.5 to 3 million "user" accounts today, but home computers are clearly not now a viable and effective option for the wide-scale delivery of electronic services by the federal government, even if only for the dissemination of public information.

Moreover, potential access is highly inequitable. Unlike the telephone or television, which are present in virtually every household, computer use is largely dependent upon income level and other significant demographic factors that may affect the delivery of federal services.

Chart 4 Percentage of Households with Home Computers by Level of Household Income [1]



The Census Bureau found that only 7% of households with income under $25,000 had computers in their homes *versus* about 40% for households with income over $50,000. Less than 5% of those age 65 and over had home computers. Only about 8% of black households and 8% of Hispanic households had home computers (*versus* 18% overall for whites and non-Hispanics). Those with a high school education were about half as likely to have home computers as those who are college graduates. Those with less than a high school education were half as likely to have home computers as those with a high school diploma.

Thus, the belief is well justified that minorities, older Americans, and less literate or lower income individuals will find on-line

[1] Chart and data derived from *Computer Use in the United States: 1989*, Bureau of Census, 1990

services inaccessible. For that reason, if the clearinghouse or any other computerized resources are to be available and accessible to the majority of the American population, public access points must be provided.

Public Access Points—Views and Issues—Role of Public Libraries in America

For this discussion, public access points include both public touch-screen kiosks and other self-service terminals and personal computers available at a public facility.

In this service concept—which was considered valuable or very valuable by over 92% of the Federal respondents—the public library was proposed as a primary point of access.

This is so because there are so many public libraries, they serve the public so widely and so well, and they are prepared for such a role and deeply interested in it. As a conduit for public information via an on-line information utility, the federal government could make the public library community a partner in public information, assuring a depth and breadth of dissemination that federal information has never had and—without such technology and partnership—cannot have.

There are 8,900 public library establishments in the US, and more than 20,000 service outlets. Just 444 of these library systems, centered in the major metropolitan areas and the surrounding suburbs and counties, serve 72% of the total US population. They have almost 7,000 service locations, including main libraries, branches, and part-time facilities.

Libraries are America's community center for information and information resources. They handle 10 million reference inquiries per week—one-half billion each year.[2]

Table 2 Number and Distribution of Public Libraries [1]

Legal Service Area Size	*Total Number of Library Systems*	*Total Number of Outlets*
Pop. 500,000 & more	70	2179
Pop. 250,000 to 499,999	83	1491
Pop. 100,000 to 249,999	291	3244
Pop. under 100,000	7534	13780

Annually, public libraries serve more than 120 million adult Americans, representing a cross-section of income, ethnicity, race, and education. While wealthy and well-educated persons tend to use their public libraries more than other Americans, the disparity is not as pronounced as that involving home computer use. Between 61% and 72% of those with lower and middle incomes use their libraries, compared to 81% of those with upper incomes (over $50,000). Fifty-eight percent of blacks use their libraries, compared to 67% of whites and 62% of Hispanics. While there is some falling off of library use with age, 51% of Americans over age 65 use their libraries. In rural America, public libraries reach 58% of the population.[3]

Libraries maintain a traditional service of circulation of books and periodicals:

- holding 614 million books and serial volumes, 4 million video cassettes, 18 million audio cassettes
- circulating 1.4 billion items per year— or between nine and ten items per year on average to every patron.

[1] *Public Libraries in the US: 1990*, Department of Education, June 1992

[2] *Libraries in an Information Society: a Statistical Summary*, Mary Jo Lynch, American Library Association, 1987.

[3] Based on a 1990 national survey by Louis Harris and Associates as published in *Using the Public Library in the Computer Age*, Alan F. Westin & Anne L. Finger, American Library Association, 1991.

Table 3 Percentage Of Public Libraries Providing Computer Resources For Patron Use [2]

Legal Service Area Size	*% that provide micro-computers for patrons*	*% that provide CD-ROM databases for patrons in the library*
Pop. 500,000 & more	61%	93%
Pop. 250,000 to 499,999	67%	83%
Pop. 100,000 to 249,999	63%	76%

Note: Due to the small number of respondents from libraries with service areas under 100,000, a statistically reliable estimate for this cohort could not be made. However, the libraries included by the universe of this table provide services to over 72% of the US population.

Table 4 Percentage Of Public Libraries Providing Searches Of Remote Databases For Patrons [4]

Legal Service Area Size	*% that will search remote databases for patrons*	*% that charge patrons for database searches* *
Pop. 500,000 & more	90%	65%
Pop. 250,000 to 499,999	79%	60%
Pop. 100,000 to 249,999	66%	60%

* Generally patrons are charged for database services on a cost-recovery basis.

Patrons visit libraries repeatedly during the year—typically three to six times a year. Altogether more than 507 million patron visits are recorded each year—on any given week about 5% of the US population visits the public library.[1]

Libraries also maintain community services such as literacy programs, information and referral collections, job and career information, youth and children programs, and more.

Increasingly, in recognition of the new media of information, libraries are providing patrons with access to computerized resources as a natural function of their expanding acquisitions.

About 30% of public libraries maintain in-house computer systems that permit onsite information searches by patrons. About the same percentage provides for remote access via modem.

In addition, about 40% report they will respond to patrons' requests for information by fax transmission. Roughly 30% permit the use of in-house fax machines for patron communications.[3]

Patrons are generally offered on-line database access as an information service at public libraries, though typically these are expensive commercial services for which the patron must be separately charged.

For all these reasons, libraries represent a ready potential for public access points to federal on-line resources and a powerful partner to the service concept of an information clearinghouse.

Yet to date, the conception of a library partnership in public information has been limited by the outdated vision of the Regional Depository Program that underutilizes both the potential and the

[1] *Public Libraries in the US: 1990*, Department of Education, June 1992.

[2] *Statistical Report '92: Public Library Data Service*, American Library Association, 1992.

[3] *Statistical Report '92: Public Library Data Service*, American Library Association, 1992. .

[4] Column 1: *Statistical Report '92: Public Library Data Service*, American Library Association, 1992. Column 2: *Non-tax Sources of Revenue for Public Libraries*, American Library Association, 1988.

keen interest in using information technology to reach virtually the entire community of public libraries. Only some 200 public libraries are served by the current program.

Compounding the inefficiency of this delivery program, most libraries must use interlibrary loans to access government materials, and typically that is their only source for such commonplace resources as the *Congressional Record*, the *Federal Register*, Congressional Hearings records, as well as statistical data and government publications generally. When asked if they would prefer direct access by on-line resource, about 2/3 of public libraries expressed immediate interest in being able to access some or all of these products.[1] Notably, such on-line information is commercial and expensive to access at present.

Since OTA's report *Informing the Nation*, some legislative and executive initiatives have developed that seek to expand the capacity of electronic access to such government information. Legislation to establish an electronic repository of GPO publications—the so-called GPO-Windo—was introduced in the 101st Congress and will very likely be reintroduced and passed early in 1993. The legislation provides for fee-based access to such GPO resources as the *Federal Register, Congressional Record*, and its own publications catalog, and it also provides for electronic access by libraries in the Regional Depository Program. It does not, however, embrace the wider concept of the information clearinghouse, with public access points, here envisioned.

Meanwhile, GPO has advanced its own "strategic plan" to employ more electronic dissemination in its publication programs. Entitled *GPO/2001:Vision for a New Millennium*, the plan calls for on-line access to the *Congressional Record* by 1993 and the expansion of electronic products generally. Some elements of the plan have already been implemented. A GPO bulletin board was placed in service in the summer of 1992. [For more discussion of the GPO strategic plan and other initiatives, see the case study on Consumer Information Center below.]

None of these efforts approaches the scope of the service concepts here envisioned. None provides a government-wide information utility for the dissemination of documents and other information. None provides for coordinated programs of public access points to such an information resource, or indeed to any of the currently available resources.

For this reason, reaction to the proposed information clearinghouse was very positive among federal agencies. In addition, the clearinghouse received the most support of all the service concepts among the nonprofits representing older Americans and consumers. This sample reflects their comments concerning its positive value:

- "Accessibility to information."
  —Nonprofit Organization
- "Convenience to large public in an unthreatening mode."
  —Federal Agency
- "Many consumers who need information do not know where or how to get it—this would allow all easy access."
  —Nonprofit Organization
- "Expanded access-sites not now available."
  —Federal Agency
- "Immediate access for persons who normally would be shut out from such services."
  —Federal Agency
- "Cross-cutting of income levels for democratic access by all."
  —Nonprofit Organization

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[1] *Federal Information: Users' Current and Future Technology Needs*, GAO, 1988.

Beyond the wide access in public libraries, the employment of "kiosks" in public places like grocery stores peaked strong response:

- "Availability in supermarkets, malls, etc...should result in those with an interest being able to quickly and privately seek information."
  —Federal Agency

- "Consumers would have access to important information affecting a purchase decision at the time and place where the purchase is taking place."
  —Federal Agency

Kiosks, however, pose a different set of problems and issues than does dissemination to public libraries, where a technological base is installed and the promotion and delivery mechanisms are in place.

Misgivings about them were revealed in the range of concerns expressed about how public access points might work:

- "Maintenance of equipment, i.e. public kiosks."
  —Federal Agency

- "Clearly explained directions in using machines and access in English/Spanish and other languages would be needed."
  —Nonprofit Organizations

- "Cost of set up for 'government propaganda on every corner'... not much acceptance."
  —Nonprofit Organizations

- "Breakdowns of equipment. High costs."
  —Federal Agency

- "Consumers fear of machines/computers, especially low-literate adults."
  —Federal Agency

- "Finding appropriate locations. Who funds the terminals? Is there really enough consumer demand to justify cost?"
  —Federal Agency

In addition to these concerns, some expressed uncertainty that the public library community was prepared for such a universal service.

- "Cost to libraries hard hit with current funding and many resources dwindling. This may be too much in technology, staff, and training for them to absorb."
  —Federal Agency

The budgets of libraries are heavily dependent upon state and local funding. Many have been cut during the 1990's so far, as a part of the general constraints upon government spending because of economic conditions. Libraries have been adversely affected:

> "In fact, the list of library woes is a long one: drastic cuts in hours throughout the country; staff cutbacks in Boston, Chicago, and countless smaller library systems; closed libraries in New Jersey and Massachusetts; canceled book orders in Philadelphia and Albuquerque; delayed branch construction in Dallas; $1 million in service and personnel cuts in San Francisco"

Ironically, "In bad times, library use goes up," as Patricia Schumann, president of the American Library Association, observed .[1]

In such a context, however, the service concepts here discussed are part of the solution, rather than part of the problem. The use of information technology to increase library holdings through an electronic infrastructure that is national in scope is cost-effective, providing more outreach and more circulation with relatively little direct new investment (except for the creation of the information clearinghouse utility itself). While some additional infrastructure investments may

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[1] "Shelving the Tradition in the Library", Rob Gurwitt, *Governing*, March 1992.

have to be made to assist some libraries, particularly rural and small libraries—and currently the federal government provides less than 1% of the public library funding base—the costs of access can be sustained by the existing Internet resources (NSFnet and BitNet, and others) and may be expanded and enhanced with the development of the NREN. This service concept may thus be thought of as a capacity literally waiting to be "plugged-in."

Moreover, demand for such services is strong. The Louis Harris national survey of libraries cited above found that 2/3 of patrons want an on-line resource in their library to access public information, especially to help them locate it. As Kenneth Dowlin, director of the San Francisco Library (and creator of Maggie's Place—one of the first library-based BBS systems), has said:

> [A survey of our library patrons] found that 86 percent want a high technology library... The public cannot understand what the professional debate is all about—books or computers? THEY WANT BOTH.[1]

Special Concerns About Kiosks

Kiosks in public locations will require a number of policy, practical, and technical issues to be resolved before they may become more universal. First, they are custom designed, not manufactured as a common appliance. The specific capacities and functionalities of the kiosks depend upon the objectives of the service and these, in turn, dictate the technologies to be applied.

The basic design concepts depend upon several service variables:

- Will the kiosk have on-line or off-line functionality?
- Will it be interactive or use only static displays?
- Will the kiosk produce printed documents?
- Will the kiosk be required to accept client data for processing?
- What audio capacities will the kiosk need?
- Will the kiosk need video capacities?

All of these variables, individually and in conjunction, poses a different set of technical problems and opportunities. Each in turn engenders factors of cost, development, installation, and operations.

Current Federal Public Access Projects

Kiosks are the subject of several federal projects briefly described here:

Service to the Citizen:

This interagency task force, under the leadership of the General Services Administration, is the outgrowth of a 1990 government-wide conference of Information Resource Managers for Federal agencies, sponsored by GSA and OMB. A special focus of this project is services for the elderly. In a related activity, Harvard University's Jerry Mechling (Director of Strategic Computing and Telecommunications in the Public Sector, JFK School of Government) is preparing an interagency study (11 agencies) on the use of some of these technologies for client services, focusing particularly upon voice mail, voice response, and audiotex systems. The study has examined the exemplars of American Express and L. L. Bean in its development. A report was expected to be available in the fall of 1992.

Veterans Administration:

Following the lead of the Service to the Citizen project, the VA has recently issued a Request for Proposal for vendors to develop and operate kiosks in public areas of VA facilities. Kiosk specifications call for handicap accessibility; touch-screen; and headsets and voice recognition to tell blind users what their choices are. Initially the kiosks will be informational—dealing primarily with VA benefit rights. Eventually the kiosks will provide for more interactivity, e.g., providing printed forms upon demand, and perhaps transactions

[1] "The Neographic Library", Kenneth E. Dowlin, 1991 (unpublished).

(permitting communication between the client and the VA).

In addition, the VA will be cooperating with existing state and local government kiosk networks, to provide script and files of VA information for clients to access. The INFO-California kiosks and a network of some 100 kiosks in the state of New York will be included in this effort. These will serve as the trial for the development of the information products needed for such kiosks. The VA noted that ready-made literature is not satisfactory for kiosk screen presentations, unlike on-line dissemination. Public kiosks need text and presentations that are adapted to the media—screen size, color, audio-capacities, etc.

Community Services Workstation Project:

A high-performance community-based computer station is in the early stages of planning by the Office of Disease Prevention and Health Promotion (DHHS) to evaluate the feasibility of interactive multimedia for use with community health and social services. Not truly a public kiosk, the workstation is meant to be a counseling tool for face-to-face interviews between case workers and clients. The case worker may use it, for example, to retrieve canned video as well as database resources to help explain the benefits of an available program to a client. The use of video assumes that the communication in the "language" of the client will be more effective than the mere display of data or a typical referral; thus, it is hoped that real clients will assist in producing these short videos to present to their peers.

The project will test systems that are designed for it at the Howard University School of Social Work ,using real cases of families at risk in Washington, DC. The test should be completed by the middle of 1993. The kiosk will utilize high-end telecommunications (T1 lines) to permit remote real-time data exchange or video processing, as well as a powerful local personal computer. The test will model a design concept capable of truly interactive interfaces between remotely placed stations and distant sources, whether recorded or live.

Social Security Administration:

Kiosk and high-performance work stations are implicit in the plans for new field office automation now under way in the Social Security Administration. Each SSA District and Branch office will be equipped with a local-area network and T1 connections to permit local and wide-area video conferencing, image and video data exchange, multimedia displays, and simultaneous applications.

At public kiosks, this service may provide limited client transaction services—such as requesting an earnings record or changing an address—but it will have value primarily for informational assistance. SSA considered the Tulare County example of the AFDC claims self-processing, and rejected it for its clientele, noting that the SSA applications are too complex for such processes. [See case study of SSA for more information].

Feasibility and Utility of Kiosks and Workstations

These projects underscore the relative newness of the technology in terms of the exploratory applications that are envisioned. Ultimately, the cost of their placement and operation must be balanced by the benefits they provide.

Except where these kiosks provide a wide range of information or high-performance interactivity, they may not be cost-effective to install compared with resources for direct person-to-person client services. More low-end kiosks, which are largely informational, become cost-effective when developed and maintained as an interagency resource. The use of an installed base by the VA is an excellent example.

Finally, when considering the utility of public access points such as public libraries or kiosks, the consumer interest for information must be assessed. While electronic media are effective to convey images and messages and to conduct communications and transactions, they are

not yet efficient for displaying documents. Until pleasing portable electronic page-displays (electronic books) become feasible and then affordable in the mass-market, consumers will prefer printed materials for the fulfillment of their more complex information needs.

However, when the new technologies are combined to facilitate print-on-demand, they offer a potential that the Gutenberg technology cannot efficiently provide.

Print-on-Demand Document Fulfillment—Views and Issues

In a recent essay in the *New Republic*, an observer wondered, "Why are books so expensive?" and speculated upon alternatives to traditional publishing. Noting that books have tripled in price in the last decade (a similar increase is true for serials), he explored the basis for this increase. Breaking down the cost of a typical $20 book, he showed that the dollars were distributed as follows: $8 to the retailer; $3 to the distributor; $3 to the actual printing/production costs; $4 to the publisher; and $2 to the author.

A variant of marketing which changed the "mark-up" might reduce the cost to $18. Eliminating retailers and distributors, as in direct mail, might reduce the book to $12. Publishing on an alternative media—that is, CD-ROM—might bring cost of the book down to $6 to $8, if sold by direct mail ($12-$14, if sold in a store). But, as he noted, "... nobody likes to read CD-ROMs. Computer displays are hard on the eyes, and no electronic retrieval system yet devised is as convenient as an ordinary book."

> So go one step further. What if we placed a small printing plant right in the bookstore and electronically shipped a book direct from the publisher? In other words, a customer browses in a store, where one copy of each book is on display, along the lines of most video stores, then having made a choice, has the book printed on the spot.... A print-on-demand system has numerous advantages. It effectively eliminates distribution costs. It also eliminates book returns. Roughly 40% of all books are never sold.... Books can also be printed from libraries. All this scheme requires is a letter-quality printer that can print and bind a book in about a minute... at 1.5¢ per page.[1]

Such a service could deliver quality publications of the typical $20 book for just $7.50. Were this so, of course, it would be a booming business. But the technologies are only verging upon such capacities, and the costs are still more uncertain than this scenario supposes.

Nevertheless, print-on-demand is an emerging industry and publishing technique—viable, expansive, and beginning to crowd out some traditional publishing while (more importantly) providing new services altogether. Mc-Graw-Hill has now begun providing electronic textbook assembly, where an instructor may designate at will the contents of a custom publication for a class. A new venture is reported to soon market kiosks for on-the-spot publication of books in retail outlets. One established publisher, Bertlesmann, began to build this new line of business in 1987, to serve the need of short-order publishing by electronic systems, specializing in print-on-demand for corporate clients. Beginning with three customers and sales of $10 million, by early 1991 they had 86 customers and $40 million in sales.

> Whether it's on tape, disk or even in hard copy form, [we] can translate it into a workable program for use with our electronic printing system. We take Postscript files from our clients, condense and raster-image process the data to put it into image form and store it on 12" CD's. We then retrieve the data as needed by the customer and feed it to the printer, which three-hole drills and adds tabs, all in line. Then it's ready for the binders.... Here, we can store and manage the customer's electronic materials, retrieve it and produce it economically in printed form, whether the customer wants 25 copies or 25,000....[2]

The Government Printing Office includes print-on-demand technology in its strategic planning and intends to provide some form of it for its agency customers in the future.

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[1] "Reader Rip-Off", Tony Rothman, New Republic, February 3, 1992.

[2] "Bertelsmann Targets A New World in Publishing", Sally Taylor, *Publishers Weekly*, July 12, 1991.

To GPO, however, which emphasizes cost/effective production in its sales program, there must be clear benchmarks for when traditional publishing (with its large volume jobs and warehoused inventory and mass-market distribution) should be used, and when print-on-demand (with its typically instant low-volume jobs) is appropriate.

> Print-on-demand technologies will allow the cost effective replication and faster turnaround of small quantities of printed materials. The employment by GPO will give information users the ability to print selectively only the precise content they wish to read or review, with the potential to save substantial natural resources, costs, and time. They will also allow specialized print versions, such as large type editions, to satisfy the diverse information needs of our entire society.
>
> Print-on-demand technologies will remain expensive, however, when compared to traditional print mass production. It is difficult today to find print-on-demand technologies with costs approaching less than 2 cents per 8.5" x 11" pages.... Additionally, it is difficult to envision future improvements in print-on-demand technologies—due to the mechanical nature of the technology, the cost of cut paper, and the cost of consumables—that will drive this cost down even a penny....
>
> Economies of scale in the mass production of printed information that realize costs well below a penny are achieved easily today, and will continue to be in the future. As a result, traditional print technologies will continue to have an important place in the future....[1]

This extended passage of the GPO strategic plan suggests that the agency views print-on-demand as a threat to traditional printing, rather than as a distinct line of business that is *more* cost-effective. Indeed, print-on-demand may have its niche in a market very different from what GPO is used to.

Moreover, the technologies may be more responsive to these issues of cost and efficiency than GPO and others have supposed. Kyoceria recently announced a new generation of laser printers that use "environmentally sound" consumables (providing for toner refilling, rather than disposable cartridge units); the company also says its printer brings the cost of laser-printed copy to a fraction of a penny per page *versus* the usual 2¢ to 4¢ per page (not including paper). Xerox has recently announced a new line of high-speed, high-volume laser printers for print-on-demand that will produce 50 pages of black and white copy per minute and 20 pages of color copy per minute—*doubling* the performance of machines now installed and *adding color* printing as well.

To federal agencies, which largely maintain their own reprographic operations (90% of their publications are *not* handled by GPO), the print-on-demand technology seems very promising. To the nonprofit sector, print-on-demand technology emerged as the most valuable service concept we asked respondents to consider.

Their combined comments highlight many of the important advantages of the technology.

- "Speed of response."
  —Federal Agency
- "The ability to collate only those materials that a consumer specifically wants."
  —Federal Agency
- "Availability of published research no longer limited by print runs."
  —Federal Agency
- "Eliminates over-production of publications. Eliminates storage of printed documents."
  —Federal Agency
- "Ability to be more timely and the possibility of savings. We often provide 'camera-ready' copy to [other organizations] of publications we cannot afford to print and distribute."
  —Federal Agency

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[1] *GPO/2001: Vision for a New Millennium*, US Government Printing Office, 1991

- "Access for schools, and availability of curricula/texts."
  —Federal Agency
- "Local community-based organizations would be able to readily access materials."
  —Federal Agency
- "This service would be valuable to the professionals that provide services to older Americans. It would cut down on costs, time, and personnel."
  —Federal Agency
- "It would encourage our educators/scientists to produce publications that may have limited consumer appeal and are too expensive to print for small quantities."
  —Federal Agency

A central utility for print-on-demand services or agency implementation of such technologies raised several concerns, mostly administrative, as revealed by this sample of comments:

- "High cost to buyers: NTIS's problem."
  —Federal Agency
- "Lessened control of materials disseminated."
  —Federal Agency
- "Start-up costs and proliferation of unnecessary publications."
  —Federal Agency
- "Present lack of standards."
  —Federal Agency
- "[Problems with]... Ability to handle high volume of requests."
  —Nonprofit Organization

In the same way that such issues are to be addressed by an electronic information clearinghouse utility, these must be incorporated into any design. A print-on-demand utility must meet at least these requirements:

- Product must be affordable to consumers or cost-effective for free distribution of such documents.
- Documents or publications selected for such a utility, indeed the utility as a whole, must be justified on the basis of cost as well as benefit.
- Documents in such a utility must be managed by library science, to ensure the collection maintains its value and integrity.
- Products (output) and files (input) must be managed by standards for quality and efficiency; for example, documents may require adherence to certain protocols to ensure consistency of production. These standards are not the same as the existing printing standards of GPO and DOD (e.g., SGML). Standards for an on-line repository must provide for ASCII (TTY) transmission, file transfer (to discrete applications such as spreadsheets or word processing), postscript files for print-on-demand, and others.

Existing technologies permit these requirements to be met today. What remains, therefore, is the capitalization of such a utility. The final costs would depend upon its scope and design. As an indication of potential costs, one print-on-demand facility of Bertlesmann (referred to above) required $38 million in investment.

While such an investment by a publisher seems fully justified based on an annual sales revenue of $40 million and a market potential estimated at $11 billion, the public sector must consider such capital investments in terms of the savings they may generate upon other spending. However, since the costs may be recovered in part or entirely by consumer fees, the resulting sales or transactions of such a utility should also be factored.

Audiotex—Views and Issues

Audiotex, voice response systems, and voice mail are different telephone services that have originated independently of each other, and offer variations upon related technology. However, each engages a common service strategy: telephone callers may interact with automated systems that provide information and transactional services.

The original audiotex systems were simply recorded messages or answering machines that permitted a caller to leave a message. As the capacity to add touch-tone menus developed, additional message options were presented or the option of leaving and receiving messages was offered. More recently, audiotex has engaged fax technology to provide callers with options to retrieve documents upon demand. Still other technology may provide fax-based input.

Voice response systems (VRS) have developed that replace the mechanical analog recording units with the capacity of digital systems and permit an interface with computer processing. Now a caller may not only select menu items, e.g., phone numbers, but also enter data by touch-tone phone.

Banks are typical users of voice response systems, through which a caller may access secured information by entering a personal identification number by a touch-tone phone. A voice synthesis then "reads" account balances, transaction histories, and other secured information. In another example, an employer in the northeast uses VRS to process annual employee elections of the cafeteria of benefit program; employees may call from their home phones and enter their selections, permitting them to make such decisions at home and saving the cost of manual input.

Voice mail is also an outgrowth of the digital technology that replaced the analog recording devices, although many still use tape recording, employing a computer to route calls, record messages, and impart information from a static menu.

Which of these technical names—audiotex, VRS, voice mail—may be employed to describe an automated telephone service will depend more upon its application than its technology, for the technologies overlap. A range of audio-based and fax-based potentials exists:

- recorded messages for callers
- recorded responses by callers
- voice-synthesized reading of data processing or interaction for callers
- data processing or interaction via touch-tone or voice-recognition input by callers
- data retrieval and output to fax upon demand of the caller
- data input by fax from caller.

These features, individually or in combination, offer services that may augment or replace many current federal services. They may be interlinked as technologies or services. Voice mail with ordinary answering and referral services can offer options to enter traditional audiotex services where recorded public information is available, or may offer transactional services, such as polling, on a VRS option. Audiotex can offer fax-back for documents that are available, as well as a VRS module for mail order.

The survey of federal agencies found that 44% operate audiotex systems — 6/10 of these provide toll-free 800 number access to them. Voice mail is now featured in 39% of the agencies and is planned for implementation in most of the remaining agencies some time over the next three years.

These systems have many advantages, as expressed by the following comments:

- "Systems such as this allow access to the Federal government—holidays and off hours. That is a particularly attractive feature."
  —Federal Agency

- "Ease of ordering by public."
  —Federal Agency

- "User fees may be a good way to cover costs" (referring to the use of a 900 number).
  —Nonprofit Organization
- "It saves time and allows messages to be processed in an orderly way."
  —Federal Agency
- "Reduces calls to be answered."
  —Federal Agency
- "Low cost method to provide service to the public, quick access to public information, easy to change information quickly, reduced staffing."
  —Federal Agency
- "Automatically provides for collection of information which can be acted upon."
  —Federal Agency

Yet as a service concept ,audiotex was assessed a generally low value by both federal agencies and nonprofit groups representing the elderly and consumers, reflecting a set of strong negatives as expressed by these comments:

- "Some systems are hard to use: too many items on the menu; overloaded lines, etc...."
  —Federal Agency
- "Inhibiting costs [for consumers to use] 900 number services."
  —Federal Agency
- "Some consumers now voice distaste in voice mail and other 'non-human' access. Especially seniors prefer speaking with a real person."
  —Nonprofit Organization
- "Many people forget to leave information which allows for follow-up (e.g. their phone no. or name and address)."
  —Federal Agency
- "Loss of personal client/server contact. Frustration by callers needing personalized service."
  —Federal Agency
- "Public resistance to machine communications."
  —Federal Agency
- "[Problems for the] Deaf... Too many buttons."
  —Nonprofit Organization
- "We can't get a substantial percentage of clients to use a simple answering machine properly.... They feel uncomfortable and/or don't understand."
  —Nonprofit Organization
- "Caller ID privacy questions."
  —Nonprofit Organization

The comments on the problems with audiotex point to matters that cannot be addressed merely by technical solutions. Such systems may "distance" the citizen from services, rather than facilitate client services.

It is a question of the "human" factor. We are not used to "communicating with machines," and many machines "communicate" badly because of the way they are employed or designed. Moreover, systems that place callers in a menu maze of choices with no option to speak to a human, or that are so poorly staffed as to make human contact hopeless, are truly alienating. Systems that are deliberately employed to *substitute* the human contact are more profoundly alienating, and arguably disenfranchise the citizen.

For example, even though the majority of its clientele wants to do its business by phone, the Social Security Administration found that the public was put off by its intentional decision to manage and discourage direct contact with community-based offices when they implemented their nation-wide 800 number telephone service, despite the fact that it employed live operators—not automated systems. SSA now views the 800 number service as an *additional* means by which the public may reach its services, an

option for service delivery, rather than a replacement of other means. However, when the 800 number service was first installed, the phone numbers of local offices were removed from local phone books so that clients seeking phone contact would be channeled to the 800 number. It was not simply a new "option"; it was a change in delivery of services that restricted options, and the public reacted adversely to it. Ultimately Congress pressured SSA to restore local phone numbers for local offices to the phone books.

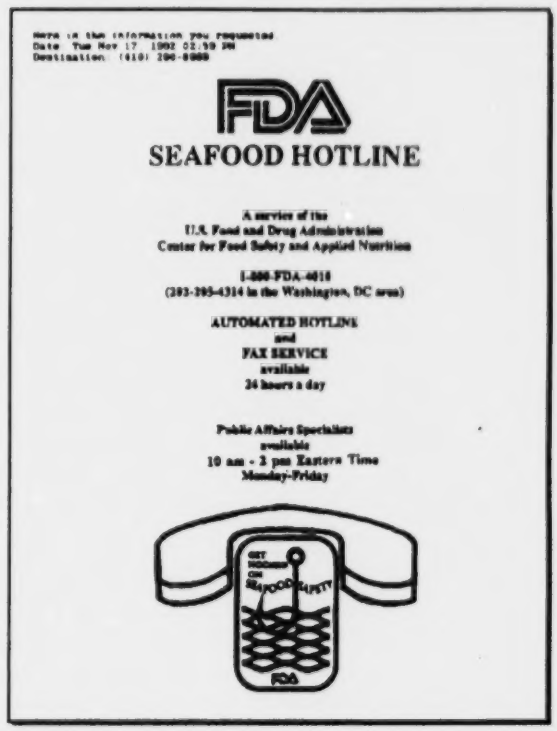
Finally, some of the more recent advances in telephone technology—such as caller ID or 900 numbers that permit phones and phone companies to act as credit/debit processors—generate strong misgivings. Such capacities, permitting a private telephone call to "identify" the caller who may otherwise withhold his or her stated identity, suggest a breach of the privacy of home and personal life. Again ,the "human" factor must be mediated if such technologies are to be employed.

Policy of the government already precludes the abuse of such technologies to intrude upon privacy or obtain and disseminate personal information without knowledge and consent. However, the application of Caller-ID or 900 number billing in federal services should require explicit consent of the citizen. Ideally, such consent should *precede* the application in such a way as to preclude abuse or inadvertent breach or coercion; consent should be turnkey for the technology, turning on access to it by the federal service. Thus, for example, a "warning" that calls may be monitored or may be subject to Caller-ID does not provide explicit consent, if that is the only service line available. Rather, callers should be told that they may *authorize* the agency to use Caller-ID or 900 number billing for some service (e.g., mail-order fulfillment or call-back), if they enter a touch-tone number or elect to remain on the line.

Examples of Federal Audiotex Systems

As widespread as audiotex capacities are in federal agencies, they do not seem to be systematically integrated into the service delivery strategy of the agencies as a whole. Such services are often ad hoc or employed experimentally, or they are only partially integrated with normal operator-assisted services.

Chart 5 Facsimile Of Cover Sheet From The Fax Fulfillment Service Associated With The Seafood Hotline—Document Was Faxed In Less Than 10 Seconds From Ordering It


Here is the information you requested
Date: Tue Nov 17 1992 02:59 PM
Destination: (610) 296-8888

FDA

SEAFOOD HOTLINE

A service of the
U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition

1-800-FDA-4010
(202-205-4314 in the Washington, DC area)

AUTOMATED HOTLINE
and
FAX SERVICE
available
24 hours a day

Public Affairs Specialists
available
10 am - 3 pm Eastern Time
Monday-Friday

Seafood Hotline (Food and Drug Administration, 1-800-FDA-4010)

This hotline began in October, 1992, and is still considered experimental. It provides information on handling, safety, cooking, and storing seafood, and it invites the callers to report problems. Live operators are available during regular business hours.

The menu is lengthy and complex, containing nine options, some of which branch to other options. One option provides the caller with the subject description of 31 publications and permits the caller to

BEST COPY AVAILABLE

request that the items be mailed by leaving name and address by recording, or to automatically receive a fax copy of the document. The fax-back system processes the request by prompting callers to input their fax number on a touch-tone phone and then routes the request to an outdialing system that cues and transmits the item immediately to the callers' fax machines.

The system also refers callers to another hotline on poultry and meat; it does not automatically route the call.

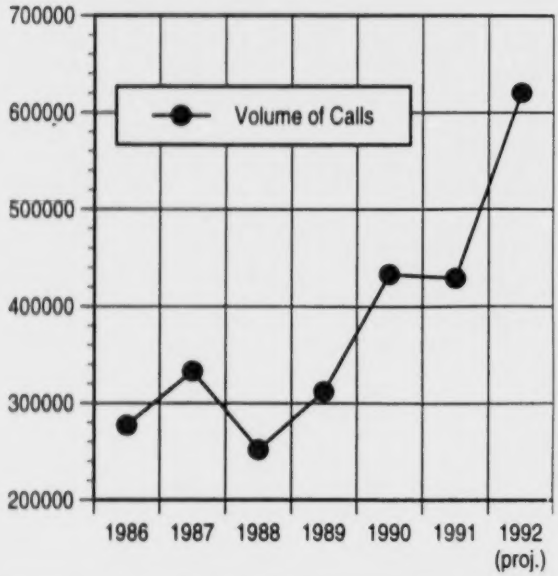
The FDA operates other hotlines as well. One encourages health care professionals to report advertising that may be misleading or fraudulent. It only receives about 200 calls per year and receives reports in only about 25% of the cases. Another hotline addresses the breast implant controversy; it received over 2,000 calls from July to October. The system is strictly informational but requests the names and addresses of those who want written information. In some instances, callers left recorded messages expressing a desire to talk to someone, but failed to leave their names and phone numbers. Currently, the FDA is evaluating how and whether all its 800 number services should be consolidated; a three-month pilot operating in four districts will assess the feasibility of the approach. As one official of FDA put it in interviews with researchers, "There should be one way for the public to know everything the FDA can do by making one phone call. We would only have one number to advertise..... Maybe we need an 800 number for US government 800 numbers."

Auto Safety Hotline (National Highway Traffic and Safety Administration, 1-800-424-9393)

The phone desk began in 1975 and began to use automation in 1980. The first systems were analog tape systems. They were replaced by digital systems after the tape systems experienced repeated breakdowns.

The hotline receives incoming calls to a recording. It distributes callers to operators who take reports of safety problems, and to an audiotex menu that offers recorded messages and mail-order fulfillment for a

Chart 6 Annual Volume of Calls Received by the Auto Safety Hotline (NHTSA)



range of services. (The services include car recall notices, child safety restraint recalls, vehicle crash records, tire grading reports, and a list of publications on safety). During off-hours, reports of safety problems are not taken, nor may the caller leave a name and phone number for a return call; the other automated systems, however, are fully functioning.

The service peaked at 433,000 annual receipts in 1990 but is now expected to greatly exceed that number because of increased promotion.

Performance of the service was not fully evaluated. Spot calls to it never succeeded in obtaining an operator to speak with, suggesting that it is overloaded. A request to receive tire-grading information took six weeks to receive, although the agency reports that consumer requests are fulfilled within two days.

The service hopes to add fax-back capacities in the next three years to permit callers to request and obtain documents otherwise mailed to them. They are considering using a

900 number so that they may collect a fee for the publication (between $3 and $4).

Cablecasting or Videotex—Views and Issues

Touch-tone phones penetrate a substantial number of households; some recent data shows that from 69% to 88% of US households have such phones, making audiotex a viable service for the large mass of Americans, especially if the service also permits others to connect.[1]

Cablecasting, however, depends upon the subscriber base. While about 80% of American households are within cable TV access areas, only about 50% are subscribers.[2]

Moreover, subscription varies widely with household income. Only 27% of those with incomes under $10,000 have cable subscriptions *versus* 59% of those with incomes over $50,000.[3]

Thus, federal agencies and nonprofits generally agreed that cablecasting was not a good medium for public information or videotex dissemination.

On the other hand, as the following comments suggest, the medium of video is highly valued:

- "For those with cable, very effective."
  —Nonprofit Organization
- "Use of the video medium reinforces any message. Use of public TV for training was very effective when our first EBT pilot project was being implemented in Reading, PA. It helps recipients and the general public understand why a change was made."
  —Federal Agency
- "Wide public dissemination."
  —Federal Agency
- "Timeliness of getting information to customers/users; ability to reach an audience not easily accessible."
  —Federal Agency
- "Provides valuable information through a medium which most consumers have access to and use daily."
  —Nonprofit Organization

But text broadcasting is generally viewed as an ineffective tool, and the medium lacks the potential for interaction and is hard to use.

- "Cable not universal; Public access channels have very limited audience."
  —Federal Agency
- "Who sees these? What are responses? I never heard of it. Where's publicity?"
  —Nonprofit Organization
- "Limited ability to target 'special interest' population."
  —Federal Agency
- "Wrong media for this type of static information. The text information shown on the screen is not interesting enough to stop and hold a viewer's attention long enough to inform."
  —Federal Agency
- "Information must be of general interest to viewers."
  —Federal Agency
- "The amount of information that is disseminated this way is generally superficial and inadequate although it is one of the easiest technologies for consumers to use."
  —Federal Agency

For all of these reasons, only about half of the respondents felt cablecasting had any real value, and they, it would seem, placed

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[1] Data provided by Bell-Atlantic, based on the aggregate customer service accounts as of 12/91.
The lowest penetration was in West Virginia at 69%; the highest was in Maryland, Virginia and New Jersey at 88%.

[2] *NTIA TELECOM 2000*, National Telecommunications and Information Administration, 1988

[3] Table No. 915, *Statistical Abstract of the United States*, US Census Bureau, 1990.

the value on the "video," rather than on the "text."

Electronic Forms—Views and Issues

Penetration of PCs to all sectors of businesses that are regulated by the FCC, FTC, FDA, CPSC, and others is high. Therefore, the application of electronic forms, operable on PCs, for reporting purposes would seem a natural extension of government and business capacities. But there are few examples of this innovation among federal agencies.

The most common electronic reporting in regulated industry involves large-scale data transactions, such as the magnetic tape reporting systems for W2/W3 wage reports by employers.

Despite the relative lack of examples for federal agencies, especially for those with regulatory responsibilities, this service concept was valued nearly as highly as the public information utilities described earlier.

Comments about the value of such a concept identified its strong practical benefits.

- "Savings of paper and time."
  —Federal Agency
- "The electronic exchange of data is more efficient for everyone involved."
  —Federal Agency
- "Less expense in staff time, faster processing would save time —all improvements in the area of electronic monitoring would be beneficial to consumers."
  —Nonprofit Agency
- "The food stamp program authorizes and monitors over 210,000 retail grocery stores. Electronic media use [would help] to provide information and possibly to match against other data sources for validity."
  —Federal Agency
- "Speed of response, automated collection."
  —Federal Agency
- "Low cost and fast response times. Information is in electronic, editable format."
  —Federal Agency

Similarly, practical considerations were raised as issues to be resolved if such a service concept were to be employed.

- "Authentication of public submissions adequate to serve legal needs."
  —Federal Agency
- "Electronic audit trail, maintenance of data communications equipment."
  —Federal Agency
- "Cost of equipment and maintenance. This is clearly feasible with state governments; it may be difficult with entities such as stores" [if on-line data exchange is involved].
  —Federal Agency
- "Limitations to small businesses (compatibility)."
  —Federal Agency
- "Securing the privacy of on-line information."
  —Federal Agency

EDGAR and Electronic Filing of Taxes

Two well-known examples of electronic forms are EDGAR and the electronic filing of individual tax returns.

Electronic Data Gathering Analysis and Retrieval System (EDGAR) is designed to obtain financial data by electronic means for the Securities Exchange Commission, as well as provide electronic access to it. How well the service works was not evaluated by this study. However, it was noted that this service is the first to address the need for "signed" documents in the regulatory process. The SEC statute was expressly amended to provide recognition of such an electronic signature:

> The term 'signed' shall include the entry in the form of a magnetic impulse or other form of computer data compilation of any symbol or series

of symbols executed, adopted or authorized as a signature.[1]

The lack of similar provisions for other agencies is one of the barriers to using electronic forms more fully, and the SEC's innovation may be emulated.

Electronic filing of individual tax returns began in a test in 1986 and by 1992 reached a peak of 10.9 million returns. While the return must be followed by a transmittal of paper forms, it provides many advantages to the Federal government and the individual filer. It speeds up the processing; refunds are issued in about 2 to 3 weeks rather than the normal 4 to 6 weeks. It reduces the error rates of processing, mostly due to tax filers calculations; error rates are 2.8% *versus* 18% for regular filers. It costs less for the Federal Government; an OMB estimate projected savings of $1.62 per return or about $17.7 million in 1992. [2]

Yet as it is designed, electronic filing will continue to have largely limited utility. IRS projects a fairly steady state of 15% of total returns for this electronic alternative.

This limitation seems to be the result of several factors engendered by the current practice. Many schedules for tax filing are not available in electronic form; thus excluding many filers (e.g., the self-employed). The continued requirement for paper transactions in addition to electronic forms discourages and encumbers use; to many preparers and individuals the advantages are mitigated by what seems to be just another paper-process, not necessarily a less paper intensive process. Finally because electronic filing is now available only through preparers and transmitters, the cost of fees for the service discourage its use. In 1991 the median fees were $70 for preparation and $22 for transmittal; the average refund for the filer of such returns was $1,200.

Electronic filing is most attractive to those who are entitled to refunds, and accordingly the service is used more by lower income persons, ironically those least able to afford the service. The average income of the electronic filer is below the national norm—$20,000 versus $30,000. He has more dependents (2.6 versus 2), and is much more likely to receive an earned income tax credit (41% versus 11%).

The service has spawned a whole new financial service—RAL—which is promoted with electronic filing as way to get refunds faster. For an additional fee the filer can be advanced refunds by the RAL and the final refund is then assigned to the RAL as repayment for the short-term loan. According to IRS about 74% of electronic filings in 1992 up through April 1st had been made through such a RAL. The median fee for this service in 1991 was $29 to $35 depending on the type of 1040 form filed.

Preparers with RAL services typically withhold their fees for the preparation, transmittal and "loan" from the anticipated return. Hence, from the average refund of $1,200, a typical or median fee is $128-134, or about 11% of the refund. Viewed as a service to the filer, it can provide rapid access to refunds, but at substantial expense to the filer. Viewed from an economic point of view, the service siphons refunds from low-income filers at little return value to them (since their refunds would be paid to them within 2 to 3 weeks at any rate), and it preys upon those less literate or capable of handling their own filings. For this reason, there is a growing concern that electronic tax filing and RALs are, like high check cashing fees to welfare recipients without bank accounts, something of an exploitation.[3] Criticism has been leveled at IRS for this result, and the Committee on Personal Income Tax has recommended that IRS concentrate efforts on making electronic filing more available and less expensive. GAO reports that to date IRS has not

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[1] 17 C.F.R. 230.499(b)(7), adopted 1988.

[2] This discussion on electronic tax filing is based upon recent GAO studies:—*Tax Administration: Opportunities to Increase the Use of Electronic Filing*, January 1993, and *Tax Administration: IRS Can Improve Controls Over Electronic Filing Fraud*, December 1992.

[3] The majority of respondents in a focus group on electronic filing were found to be not aware that RALs were in fact a loan.

responded adequately to this criticism and has instead favored increased competition among preparers and transmitters to reduce the costs of electronic filing.

As it is, the service is designed to benefit commercial tax preparers and transmitters that have an investment in necessary technology, over the individual filers or those preparers without the technology. While some individual filing has been permitted, the vast majority of the filing is by some 51,000 participating providers, using computers and modems and special software and tax forms required by IRS. Low-tech preparers are disadvantaged: the GAO survey of preparers in 1991 found that 60% of those not participating in electronic filing said that the cost of hardware/software is the chief barrier. Such preparers felt that client demand was weak for the service; the investment seems to offer little advantage to their business.

To most filers, the current costs of electronic filing are too high. A Roper survey of taxpayers found that most felt electronic filing ought to be priced at about $10 or less—rather than the typical $20 that transmittal fees now cost or the $55 that those getting RALs now pay.

Some experiments have been made to make electronic filing lower in cost. Since 1991 IRS has offered electronic filing in a few of its field offices (2 or 3 of the 63 district offices), but it has not publicized the service and has processed very few (just 2,446 returns were filed electronically in 1991). In 1992 HR Bloch, the nation's largest commercial tax preparer, offered some free electronic filing as a promotion to its services (about two-thirds of those who filed electronically in 1991 used Bloch). However, neither Bloch nor IRS studied the impact of this promotion, and it is not clear whether it would be institutionalized.

IRS tested an audiotex tax filing service in an experiment in Ohio in 1992, called Telefile. Limited to those filing 1040EZ returns, where refunds are expected, the experiment served 126,000 filings, out of 700,000 who were eligible. The experiment is to be repeated in Ohio in 1993. Telefile still requires that a signed 1040 form must be also filed. Because no third party prepared or transmitter is involved, Telefile has no fees for filers and is processed through the same electronic systems that generates refunds within the 2-3 week time frame.

IRS has a number of barriers and limitations to full electronic filing service. First, their data systems as a whole are inadequate to the task. They lack computational and storage capacities needed and their current systems are fraught with other problems requiring resolution under other compelling priorities. Second, the requirements for paper filings, specifically requirements for signature and certain documents (e.g., W-2s), would take statutory amendment to the IRS code to eliminate and their elimination poses some serious risks to increased fraud and security. Third, filing fraud by electronic forms makes fraudulent refunds more readily and quickly available, undermining checks and safeguards that might prevent their issuance. This problem, in turn, is related to general problems with information technology at IRS and the need for advances in their data systems.

The experience with electronic filing as an electronic form demonstrates the feasibility and cost-efficiency of the concept, but it also reinforces the concerns over such electronic delivery strategies:

- Such services may generate inequities among clientele
- Electronic service delivery will require wholesale changes to service design to be more effective and equitably available
- Participation requires an investment in technology and a readiness to use it which can be a barrier to entry

Ironically, here, the service is readily available and frequently used by lower-income persons but it comes with a high fee attached. Though the service is available to home computer users who have modems, these same populations would likely be excluded from its benefits and there is still a third-party fee for the filing (not to mention

the cost of the commercial software for preparation of the forms).

As its is, as a service which is largely focused upon paid preparers with small computers, electronic filing is not a good model for electronic forms or for the application of electronic delivery of services.

Computer Assisted New Drug Application program (FDA)

The Computer Assisted New Drug Application program (CANDA) is not the neat, simple process that other applications of electronic forms could be. It might more accurately be described as the automation of a lengthy regulatory process, marked by frequent data exchange and computer-assisted analysis.

The Food and Drug Administration (FDA) has been receiving data in an automated fashion for more than two decades. The Division of Biometrics pioneered the original submission of data in order to avoid the task of rekeying the data from the application to analyze it. When the Division of Biometrics initiated these efforts, its statisticians were among the few staff members in the agency experienced in computers.

In 1985, Abbott Pharmaceuticals pioneered the use of such data exchange for FDA's New Drug Application process when —with FDA's encouragement—they gave the reviewer their submission made directly on a computer. The process worked so well that from 1985 to 1988, the FDA encouraged other companies to submit their applications in both computer format and paper. The thinking was, "let's find out what computer tools help us."

These early efforts took place at a time when there was a limited amount of equipment in the agency and relatively few staff who were experienced in using it. At that point, the agency and the Pharmaceutical Manufacturers Association (PMA) initiated joint working groups to explore the feasibility of the computer-assisted new drug application and its possible impact on both the agency and sponsors.

There has been dramatic change since that time. Now, nearly all members of the staff of the Center for Drug Evaluation and Research have a microcomputer or terminal on their desks, and staff are rapidly becoming experienced in computers.

To assure that all interested parties were aware of the efforts and developments, a *Federal Register* notice published on September 15, 1988, announced that the agency believed the increased use of computers might improve the efficiency of the drug review process. The notice was intended to provide basic guidance to drug sponsors and other interested parties on the factors that the agency considers in accepting computer assisted new drug applications and the topics that the sponsors should be prepared to discuss with the agency. The notice made clear that the policies applied not only to new drug applications and antibiotic applications, but also to investigation of new drugs and abbreviated new drug applications.

The agency has received almost 80 CANDAs to date. This number does not include the submissions of data on tape and diskette that the Center has accepted for some time. Many of the reviews involving CANDAs have been completed. The agency hopes that virtually all submissions it receives will either be fully automated or have major automated components by FY 1995.

The automated submissions under the CANDA are received and processed in a variety of forms, including direct access by reviewers to the applicant's mainframe, direct access to a third party mainframe, review of the application on a microcomputer in the reviewer's office, review of the application on an agency mainframe, or review of the application from an optical disk. The CANDA can also be a combination of these methods; in addition, it may include an electronic mail component or the applicant's use of facsimile to speed communications regarding a submission. Typically, microcomputers are used for CANDAs, employing several applications for the review process—word processing,

statistical analysis, pharmacokinetics analysis, electronic mail, modeling, graphics, telecommunications, data entry, databases, spreadsheets, systems development, inventories, and laboratory data capture and analysis.

Electronic mail is a critical component of the CANDA process. According to the agency, the early experience with electronic mail systems was not very effective, due to the fact that agency reviewers were obliged to use e-mail systems of the submitting drug companies. Although such communication remains an option, the electronic mail system at the agency itself is now available for the purpose. Communications via e-mail are also enhanced by an Internet connection via Bitnet. The agency has not set uniform procedures to be followed in electronic communications via electronic mail or use of facsimile. Some divisions require that a sponsor submit copies of all transmissions from both the sponsor and the agency as part of a formal submission on a monthly basis. Some divisions require that all electronic messages be cleared before sending. To minimize the security risks, the agency does not allow executable data files to be sent via electronic mail.

The program "has increased the knowledge base of the reviewers," according to Tom Reddin, Director, Office of Information Resources Management. "They're exposed to technology and receive training by [the pharmaceutical firm that submitted the drug for review] and the third party company, such as Research Data Corporation, on how to ask questions." The program is designed to facilitate review of clinical trials. "It has definitely shortened the cycle," Reddin said.[1]

Robert Bell, Director, Office of Management, Center for Drug Evaluation and Research, said that traditionally a pharmaceutical company spends eight years on the new drug approval process. The Food, Drug and Cosmetics Act requires an investigational New Drug Application. When the company has satisfied FDA that it has done enough animal testing to qualify for clinical trials., the company presents its protocol, and FDA looks at the data on the basis of its safety and the informed consent of potential users: is the data sufficient; is there reasonable risk to put it in humans? As clinical trials then are authorized and occur, the process continues with the monitoring of thousands of pages of data.

The review process involves not only medical officers, of whom there may be up to 120, but also experts from the fields of chemistry, pharmaceuticals, toxicology, statistics, microbiology, epidemiology, etc. —a total of about 600 reviewers in the FDA center.

Describing how the computer streamlines the process, Bell noted that often problems show up in the human liver. In a computer database, the reviewer can get to the data quickly. Then, the reviewer can call up the clinical case and look at what the reports say. "Paper takes months; a computer takes minutes," he said.

The average time to approval for a CANDA submission is eight months less than it is under a paper process. In a sample of cases completed *fully* by automated processing, the agency reported that the average time to action was 17 months instead of the usual average of approximately 30 months. [2]

The agency is now defining what it considers to be a minimum alternative for submission of a CANDA. The agency realizes that many of the CANDA submissions to date are quite sophisticated and overly expensive, if the submitter does not already maintain such data systems. The agency intends to develop standards that do not entail a large expense to the submitting company. For example, if text material were submitted as a word processing document in a standard ASCII format, the agency believes that this in itself would significantly aid the regulatory review process. Limitations of ASCII currently undercut the communication of some text documents, because ASCII character

[1] Comments of Mr. Reddin from interviews.

[2] *CANDA: Guidance Manual*, Food and Drug Administration, 1992.

convention lacks scientific notation and special characters that may be used. However, tabular data, submitted in comma or tab-delimited ASCII, has proven highly valuable.

"We are trying to sort out an acceptable model," Bell said, pointing out that the ideal model should have graphics, spreadsheets, analytical tools, easy manipulation of data, etc.

FDA receives about 100-150 applications each year. Fewer than 10% have been submitted and processed by the CANDA program since it began in 1988. About one in ten new submissions is now received as a CANDA.

No information on relative costs is available, but the trend toward CANDAs is reportedly reducing the agency backlog, freeing overworked FDA staff to move on to other things.

"The big savings is how much faster one can get a pharmaceutical to market.... Will the consumer see that savings? You're seeing it in drugs getting out today," Bell said.

Bell said the process is changing how the pharmaceutical companies operate. They're trying to do away with paper, handling, steps. The agency believes that the automated process will result in a significant reduction in paper. Submissions still require a large amount of paper. In the future it might be possible to require that only a relatively small amount of paper, if any, actually be submitted, with the bulk of the submission, including both the required and the frequently requested case reports, submitted in an automated form, e.g., optical disk.

Surprisingly, he noted, the industry itself has not been well-automated, and this trend may ultimately affect its competitiveness in the global economy.

"I think we're leading a revolution in how the pharmaceutical industry does business," he said.[1]

Smartcard and EBT—Views and Issues

The technology of smartcards and electronic benefits transfer (EBT) has been evaluated and applied experimentally by several programs affecting older Americans: food stamps, Medicare, Medicaid, and SSI. Of these, only the EBT programs for food stamps are advancing to full implementation. Programs are in various stages of implementation in six states, and two additional state programs are pending USDA approval; demonstrations of EBT and "smartcard" technology are also being tested in five locations. [See case study on food stamps and EBT for more information] [2]

We found no direct programs for which smartcards are being used by or for consumers. However, smartcards are employed in tobacco subsidy and peanut grower subsidy programs.[3]

In the programs we addressed, the technology has two basic applications— each with two basic variations. First, the technology may be applied to authorize the transaction of purchases or cash disbursement to recipients of income maintenance programs. Second, the technology may be applied to authorize access to information about a card-holder, to authorize a claim for medical assistance or insurance payments, or to assist in the delivery of health care or other services.

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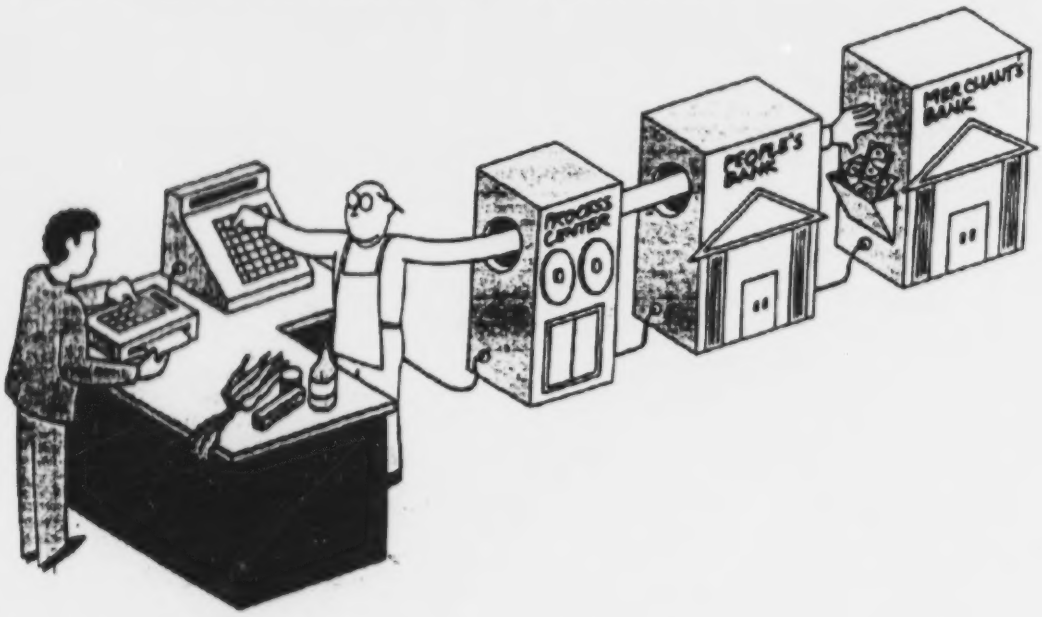
[1] Comment from Mr. Bell based on interviews.

[2] The technology of "smart cards", magnetic strip cards, electronic benefit transfer, memory cards, optical cards and related devices are considered as one general kind of technology for application to the federal service delivery. There are significant differences between them in their capacities and applications. We make distinctions only when material to service delivery. The comparative costs and pros or cons of these different cards or the types of data systems needed to support them has not been fully evaluated.

[3] "Marketing New Technologies", *Sales and Marketing Management*, July 1988. The peanut grower program involves as many as 70,000 participants.

Chart 7 How the EBT Program Works for Food Stamps



From *Money*, October, 1989

The "authorization" is performed by the client, employing a computer-readable "card" that is issued to him or her with a secure personal identification code for access, in just the same way the credit and debit cards work in the commercial sector. The authorization may be processed on-line or off-line. If on-line, the authorization requires a connection to a host that stores cardholder data and processes the transaction in real time telecommunications connection to the card's "terminal" or "reader." An example of an on-line system is the ATM machine and a bank card. If off-line, the card itself must contain the information it needs to authorize the transaction, or the "reader" must contain the necessary information. An example of an off-line system is the paper fare card with a magnetic stripe that credits and debits subway use in many cities.

The card that is used may be a simple magnetic-stripe plastic card of the type issued by banks, or it may be a "smartcard," possessing a small microprocessing chip with non-volatile memory that can contain data about the cardholder. Both may be used with off-line or on-line systems, but only the smartcard can provide extensive off-line transactions. The magnetic stripe card costs roughly 50¢ to provide to the client. The smartcard costs between $1.50 and $150, depending upon the functionalities included within it.

Application to Income Maintenance

The application to income maintenance is primarily as a debit card. A clearinghouse contains the entitlement or account data about the client and debits the authorized transaction from the recipient's account. A disbursement is then triggered via normal electronic banking to credit the account of the merchant, or in the case of a cash disbursement, to reimburse the issuing bank.

Current law requires that the EBT program for food stamps be "cost-neutral." That requirement, plus the other advantages to clients and state administrators, has promoted the development of multipurpose

debit cards. An interagency task force, co-chaired by the Treasury Department and the Department of Agriculture, coordinates the development of federal EBT programs for income maintenance. Currently, EBT programs seek to coordinate the entitlements of food stamps, AFDC, and WIC (nutrition program for women, infants, and children, similar to the food stamp coupons, but for dairy products and juices only).

> "Our dream is to have the mother have one card, and all the information is there. When you take it to where you get your benefits, it would debit your account."
>
> —Ann Chadwick, Assistant Secretary for Food and Consumer Services, USDA

EBT transactions for Social Security are in one sense already widespread via SSA's "direct deposit" program, which automatically transmits monthly benefits to the client's personal bank account. Currently, 54% of Social Security beneficiaries receive their monthly entitlements in that way.

However, Supplemental Security Income (SSI), which provides the elderly with a means-tested supplemental payment to their Social Security, is much less successful in its direct deposit program, simply because many SSI recipients do not have bank accounts. Only 20% of SSI recipients use direct deposit. [1]

SSA has attempted a one pilot of an EBT program for SSI, using the direct deposit model. A bank in Baltimore issued a holding account for recipients, to which the monthly SSI payment was issued; the recipient then accessed the funds by ATM card and other withdrawals. The pilot—called SecureCard—proved not to be cost-effective when compared to check payment; SSA terminated the pilot in November 1990 for a variety of reasons, including lack of funding to continue the pilot for a longer period. A second pilot in Houston, Texas was initiated in 1991—known as the Direct Payment Card; it has some 5,000 Social Security and SSI recipients involved and is still continuing. SSA is also participating with ongoing interagency planning for a unitary smartcard that would be capable of delivering a variety of Federal and State administered benefits.

SSA states that it remains "very committed to improving service and providing electronic payment alternatives for beneficiaries who do not have a bank account, particularly those in the SSI program."[2]

Application to Health Programs

The application to health programs is less well developed. It lacks the clear strategic focus—and simplicity—of the application to income maintenance.

First, why use the technology? To reduce paperwork? To expedite claims payments? To improve the integrity of medical records and access to them? To improve treatment? To facilitate self-care and health promotion?

To understand the objectives of federal programs that might employ this technology and the circumstances in which they might use it, we must think of the applications as acting upon two primary data sets—medical records, on the one hand, and entitlement records (claims or payments), on the other.

Most of the applications discussed by HCFA and DHHS focus on the application to entitlement or claims records, where the card is a functional part of a larger scheme of automation, a standardized electronic processing network that will automate the claims and payment mechanisms for Medicare, Medicaid, and insured health care generally. In such a scheme, the card need not be "smart." Indeed, the data that it contains may be very limited. Current demonstrations in Louisiana—and one

[1] Direct deposit participation rates in SSI and SS programs are provided by the Chief Financial Officer's Financial Indicators Report, Social Security Administration, August 1992.

[2] From comments of the SSA to the draft of this report.

proposed for Wyoming—use such cards instantly to input key entitlement data about the recipient of Medicaid to a provider system that is networked to state subsystems. The data permits an immediate automated check of current entitlement. In most other states, this is done by a phone call to the state administrative office, sometimes with voice response systems that receive the entered Medicaid number.

The Health Care Financing Administration (HCFA) has been seeking ways to increase the number of Electronic Media Claims (EMC) submitted by providers of health care services for Medicare insured persons in order to reduce administrative costs. The current objective is to increase to a level of 55% of total claims during the last quarter of fiscal year 1992. Expectations call for increasing this to 95% of all claims by the end of 1996.

Health care providers, of course, have developed an array of data systems to automate claims intake and their claims record management, processing, billing, and so on. Today, there are only limited standards that govern them, such as diagnostic codes. No technical database or systems standards govern them, although HCFA has established standards for EMC data exchange. A recent HHS legislative initiative would begin development of such standards, and a current project of the American National Standards Institute would establish certain voluntary standards for the data structures of claims records, to facilitate their transmission between systems. DHHS has pledged to abide by the ANSI standards, and in that way hopes to promote their widespread acceptance, as care-providers that wish to transmit claims data electronically for Medicare reimbursement must comply with them. Care providers, especially hospitals, are concerned that these standards and other data requirements of HCFA will require expensive and time-consuming modifications to existing data systems. Many providers are without automated systems or lack the ability to engage in data transfer by telecommunications. For such care providers, DHHS proposes to permit filings by fax, using forms that may be scanned by optical-character reading technology by the receiver. As an incentive to participate, DHHS will promise to pay care providers electronically for the claims they submit electronically, thereby speeding up the payment receipt.

Example of Medicare EBT Application

In a recent pilot project funded by HCFA and operated by TransAmerica Life Company (California), an Electronic Media Claims data entry, edit, and submission system was developed that employs Point-of-Service (POS) terminals and magnetic stripe cards issued to recipients.

This system has been fully developed and is now fully capable of collecting Medicare Part-B (physician) claims data, editing it, formatting it into the HCFA National Standard Format, and transmitting related claims to the appropriate carrier. The system has other administrative support functions that include printing of all claims input data. This system reads beneficiary identification data from a magnetic stripe card which improves the accuracy and speed of data entry at the provider's office. It incorporates the provider's specific medical practice data into the easy-to-use Point of Service terminal. Such data includes procedure code tables, pricing tables, beneficiary tables, and the like. When installed, it is ready for immediate use by the participating provider. It may be used with personal computers at the provider's office, placed between the PC and its printer, trapping the claims records and inserting them into the data standard format. These claims records are then transmitted to the appropriate carrier electronically on a periodic basis. The quality of these claims has significantly improved over those submitted using other technologies. The approval rate of these claims by the carrier is 80%—a 20% improvement over the previous approval rate.

The pilot associated with this system was completed in May, 1992. An extended pilot will now consider enhancing the data processing by a data exchange between

HCFA and carriers who will act as intermediaries for provider inquiries of that data. Specifically, the provider may seek to verify Medicare eligibility at the time of electronic claims filing. The immediate response will save further processing and permit the provider to follow up with a patient who may still be in the office or facility.

An electronic claims processing that is standardized for Medicare and Medicaid will have the effect of standardizing claims processing generally. While many physicians do not accept Medicare and Medicaid assignment, virtually all institutional care and hospital facilities do. Overall, the combined government funding of health care pays for 42% of all health care in the US. [1]

No extraordinary infrastructure would be required for this electronic claims processing to be feasible. Indeed, it must accommodate various capacities and venues of electronic data—small to large systems, on-line and off-line data exchange. But a standard data structure and data set—an "electronic form"—must be established.

It is estimated that a mature nation-wide electronic processing system could result in annual savings of $6 billion.[2]

A Vision of Health Care for the Next Century

Use of this technology to interface "medical data" represents a different set of objectives. Here the magnetic stripe card carries personal medical history about the individual ,and swiping it through the terminal inputs it or possibly rewrites it to reflect current treatment or condition. It is in this context that the smartcard—or the memory or optical card—may be employed, since these may contain fairly large amounts of data.

Again, the smartcard is only a small part of much larger automation of information and transactions. Some of these applications have free-standing value as treatment regimens, but the advocates of such systems envision a global benefit to public health and medical care:

> An interactive personal health information system (PHIS) would provide the individual with an overview of his or her health and almost any type of health information and the first line decision support 24 hours a day, 7 days a week. A lifetime health record could be used as the repository of the individual's health information. It would not only store the individual's information, but provide data which allows the PHIS to customize its information to the unique needs, interests and educational capabilities of the individual. The PHIS personal health record would be linked to a dynamic electronic medical record. Both would maintain strict privacy and confidentiality, yet in a manner that allows emergency care professionals to access life and health critical information on demand in remote sites....
>
> Public health can function more effectively with an enhanced information infrastructure. This could be accomplished through better tracking, monitoring of multiple risks, provision of early warnings.

Although the primary value is on the health of the individual and the efficacy of the treatment, applications like this to improve medical treatment are also a cost-control strategy.

> By having an uninformed or poorly informed consumer, the American health care system may be generating as much as 15% to 35% more health care claims than are necessary at a cost of hundreds of billions per year. This inevitably leads to an extraordinary waste in terms of health-related costs, disabilities, iatrogenesis (disease caused by therapy) reduced productivity and loss of life.[3]

A more modest vision of such a networked information health care system is offered by a recent finding in a study by Arthur D. Little that:

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[1] *"Telecommunications: Can It Help Solve America Health Care Problems!*, Arthur D. Little, July 1992.

[2] IBID.

[3] *Health in the Information Age: The Emergence of Health Oriented Telecommunication Applications*, Michael D. McDonald & Henrik L. Blum, Environmental Science and Policy Institute, 1992.

> Health care has made astonishing gains in adopting advanced medical technology. It is far less progressive in its use of telecommunications and information technology to improve its traditional, paper-intensive patient care, diagnostic, and clinical processes.... Electronic management and transport of patient information will decrease costs by almost $30 billion.[1]

These cost savings would be achieved by widespread adoption of innovative applications:

- *self-care enhancements* by use of "telemonitoring" devices for home care in lieu of treatment at medical facilities, or the use of "telephone house call" systems providing expert systems (with home-based terminals, or operator assisted and audiotex or voice response systems) for triage and self-care *before* a patient may come to a provider facility
- *home-based terminals* may also promote wellness generally
- *networking providers to share medical records* and thereby improve efficiency of information management and providing more integrity for medical treatment (e.g., reducing risk of adverse interactions of prescription drugs)
- *networking providers to digitize and transmit laboratory and other medical data* that now is in image form (X-rays) or other output associated with paper files

While there are significant foreign examples of such applications (though none as global as these visions), only a scattered number of applications like these are in practice in the US health care system. Initiatives of this kind by the federal government affecting older Americans are also minimal. A Medicaid pilot, soon to begin, which will involve two states, seeks to evaluate the application of such smartcards and POS-like readers in the transaction of prescription drugs at pharmacies for Medicaid recipients. One stated objective is to protect recipients against adverse drug interactions. A like-minded program in Ontario (Canada) found that it reduced unnecessary hospitalizations due to medication contraindications. The government estimated that it may save 30% to 40% of hospital admissions, especially of the aged, due to adverse drug reactions, saving the province almost $140 million per year.

Systems to achieve the global benefits and large cost-savings envisioned by networked medical/health care would require substantial investments—costs that no advocates have yet estimated—and would involve new medical regimens (e.g., home health terminals) that in themselves require new protocols, training of personnel, support personnel, devices, and so on. As compelling as the arguments for this vision may be, it is unclear at this point that the investment is cost-effective, given the larger questions of the efficiency of the US health care delivery and financing systems that must be addressed.

The precipitous crisis in US health care is its extraordinarily rapid inflation, estimated by one source to be as high as 20.4%.[2] The result of such inflation is to drive up the cost of insurance, exacerbating the federal budget and state fiscal problems, and burdening employer compensation systems or diminishing the benefits that employers provide, placing the costs upon the employee.[3] Health costs per employee, assuming that it rises with this inflation, will increase from $2,700 per year in 1989 to $8,100 by 1995.

Any serious effort to apply networked medical and health care information, employing any of these innovations on a

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[1] *Telecommunications: Can it help solve America's health care problems?*, Arthur D. Little, Inc., July 1992.

[2] "Cost of Health Care Soars; More increases Seen", Los Angeles Times, January 30, 1990 (citing a study of Foster & Higgins, national accounting firm)

[3] *Employer-Based Health Insurance: High Costs, Wide Variation Threaten System*, General Accounting Office, September 1992.

wide scale, must compete against this more urgent problem. If it adds costs in the short-term (because of investments), it will run against the greater imperative for immediate, real cost-reductions.

In short, while specific applications may have specific medical benefits, a global medical and health information network may accommodate and even compound existing structural inefficiencies, rather than remedy them.

If the reform of health care delivery and financing by the Congress is truly comprehensive and truly seeks to manage the marketplace and market forces that govern it, then careful consideration of networking and all the technological applications associated with it should be a part of the global vision. That is, if the reform were to seek to directly manage delivery and financing by limiting carriers or regulating provider services as to kind as well as prices, then the consideration of how medical records should be shared and utilized is a natural element of such planning.

But if the market remains fundamentally unchanged, the imposition of national mandatory standards for networking may drive costs up in the near term, we believe, more than it may reduce them.

On the other hand, focused applications may provide incremental experience to test and evaluate the larger potential; if they are cost-effective in their own terms, they should be favored. The smartcard for controlling medication use is a good example of a modest application for a clear result, which entails relatively marginal costs.

Comments of Respondents

Respondents focused more on the positive practical effects of improved claims processing than on the visionary integration of medical information and telecommunications for medical care.

- "Information could simplify billing, treatment, services, etc...through the providers' use of technology, not the seniors'."
  —Nonprofit Organization
- "Paperwork reduction for HCFA Programs."
  —Federal Agency
- "Prevent thefts of benefits."
  —Nonprofit Organization

However, the perceived negatives of smartcards—and all that they entail—focused more on the implications of the integrated medical records.

- "Sounds too 'high-tech' for seniors to handle easily."
  —Nonprofit Organization
- "Implementation; Computer error difficulty in correcting; Invasion of privacy."
  —Nonprofit Organization
- "The need to deal with privacy and other concerns by enrollees in the program."
  —Federal Agency
- "Older adults might lose or misplace their cards with valuable information contained....This service would cut down the human contact received by older Americans who need assistance in Medicare, Medicaid and Social Security information."
  —Federal Agency
- "Minority barriers; will it be used by Indian Health Service? Answer: no."
  —Nonprofit Organization

From virtually all respondents, the issue of privacy was forthcoming. Respondents deeply worried that medical records may be too accessible— in the coffers of a central data bank, or in a vulnerable plastic card. The free exchange of personal data, apparently without consent, troubled them, especially in the vision of a networked medical and health care environment where providers and carriers and others in the industry would seem to have access to

virtually any and all medical data (so that they can better treat the patient). The exchange of data affects not only the privacy of the individual, but also the confidentiality of treatment, that is, the ethical obligations of physicians and others treating their patients.

In current practice, a patient has the right to withhold medical information, and to obtain treatment confidentially, as well to be assured the privacy of his records. Networked care would challenge those rights in ways that do not now occur.

While existing federal law may safeguard the records of federal programs, they may not extend to proprietary records of providers. By way of some model of how those records may be exchanged in this new environment, we may refer to the current exchange of medical data with the industry clearinghouse, the Medical Information Bureau (Boston), which provides carriers with private medical data for the purpose of underwriting. While the organization has adopted standards of privacy, disclosure, and integrity for its data, consistent with provisions of the Fair Credit Reporting Act, such data is not strictly within the scope of that law, nor was that law written with such issues within its breadth or understanding.

A serious consideration of federally supported networked medical data must therefore develop and provide protections to ensure adequate privacy and safeguard the rights of the individual. At the same time, a balance must be struck among the complex issues of data property, public health, malpractice, and medical exigency that these systems raise.

Transaction Clearinghouse—Views and Issues

Like electronic forms, the concept of a transactional clearinghouse represents an application of technology that is almost entirely untested.

Interestingly, the nonprofit community felt the concept more valuable than did the federal agencies, though it was clear to all that such a concept would promote program integrity and presumably reduce overpayments.

- "Safeguards against errors."
  —Nonprofit Organization
- "Streamlined administration for patients and providers; cost savings."
  —Federal Agencies
- "Avoid overpayments."
  —Nonprofit Organization
- "It has the potential to provide information quickly and cheaply while improving program integrity."
  —Federal Agencies
- "This service would expedite some of the necessary changes in personal status that occur with older Americans. This service would enhance service needs without creating an excess of paperwork."
  —Federal Agencies
- "Coordination of services is badly needed."
  —Nonprofit Organization

The difficulties of such a transaction clearinghouse arise with the isolating nature of program missions. The fundamental administrative necessity to create data systems and processes so that the client services can be delivered adequately and expeditiously, the need to safeguard that data, and to manage it efficiently—all promote independent inward-looking operations that each agency must of necessity seek to make self-sustaining. None can depend upon the data or processes of another in order to fulfill its obligations.

This tendency toward program independence exists not only across agencies, but within them, affecting the ability of different statutory programs within the same agency (and even separate functions within a common program) to communicate data and share resources. The Veterans Administration, for example, does not have a master beneficiary record for veterans, but maintains different data systems and

independent data records for its many programs—pensions, mortgage loans, student aid, etc.

Even the model of a "data switch," where a central processor might receive and transmit "critical event" reports (changes of address, death, income, etc.) to participating agencies without requiring actual data system links, was not well received by agency officials. The need to evaluate such data in the context of their individual programs—and hence the need for direct contact with the client—outweighed the advantage of notice; the agencies preferred to keep the onus on the individual to make the proper report to the proper authority.

The transaction clearinghouse was therefore poorly received and was viewed by many with skepticism and even anxiety.

- "Will be used to harm, not help."
  —Nonprofit Organization
- "Incorrect information, invasion of privacy, confidentiality."
  —Nonprofit Organization
- "Problems with privacy, lack of specific information needed by various agencies which is unique to the programs they operate, and inability to alter records quickly due to verifications that may be needed."
  —Federal Agencies
- "Should be used for entitlement, not just reductions."
  —Nonprofit Organization
- "Major problems continue to occur with the 800 number of the Social Security Administration. Seniors want contact with real people, feedback, documentation, etc..."
  —Nonprofit Organization

The transaction clearinghouse concept may represent a potential to improve coordination of income assistance programs, but it will require the commitment and interest of agencies to pursue its complicated technical and policy issues. As it stands, no agency would undertake leadership of such a project, since it has no clear payoff to improve operations they are now strained to maintain and improve. Where programs require interagency coordination, government-wide management systems must reinforce them. Where those interagency tasks require infrastructure, some common utilities should be provided.

Finally, Federal commentators point out that a Transaction Clearinghouse that would be directly accessible by individuals would require a secure identification system—one that would safeguard the individual's privacy and protect the data confidentiality and integrity—so that client-initiated transactions could be assured for their authenticity and origin. Such an identification system, such as one employing fingerprints or other biological identifiers, is feasible but contains political sensitivities and investment costs that discourage it.

Current Use of Technologies by Federal Agencies—Generally

The survey provided a baseline about federal agency respondents to help us understand the viewpoints they offer on the applications. While this is not a representative sample, it suggests that the growth of electronic capacity is rapid.

In 1988, for example, a GAO survey of federal agency uses of technology found only 24% of the non-defense agencies utilizing e-mail.[1] Today, in this group, we found 92% use e-mail, and a significant number use e-mail to communicate with clients outside of the agency (presumably other organizations). Moreover, the e-mail communications represent a significant volume of the agency's written communications.

Fax is, of course, ubiquitous, and direct telephone service for clients is the mainstay, with about half providing one or more 800 toll-free connections for client services.

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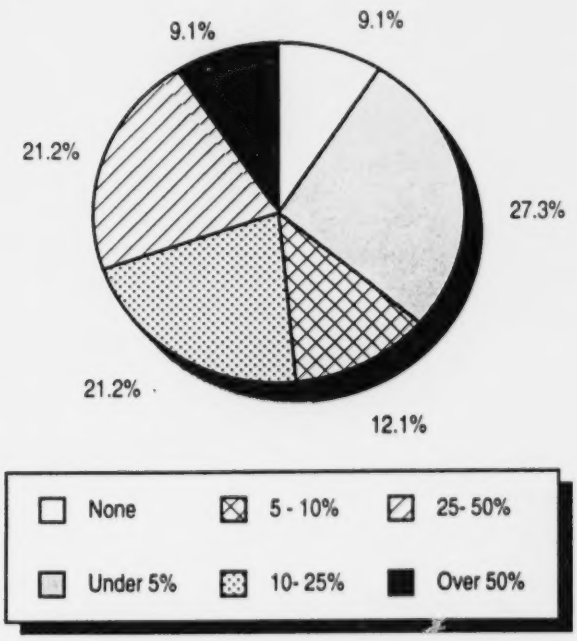
[1] Federal Information: Agency Needs and Practices, General Accounting Office, 1988.

Chart 8 Percentage of All Written Communications that Are E-Mail in the Agency (n=33)



A surprising 43% also offer clients BBS access—to press releases, documents, agency databases, and so on. None of them offers network connections that provide local area access via Telenet or Tymenet or CIS or some other telecommunications channel, although presumably all numbers are FTS. A few are addressable through the Internet.

In addition to a wide range of telecommunication services, the agencies listed a number of other significant electronic products and services including:

- touch-screen information terminals or kiosks (three reports)
- data transfer
- Internet —file transfer, remote telnet connection, e-mail, conferences (four reports)
- PC based program info station; program info station; Videodisk interactive program info station

Table 5 Percentage of Federal Agencies Employing Select Non-printed Media for Public Information (n=33)

Public Service Announcements —Radio	26%
Audio Tapes	33%
Public Service Announcements —TV	44%
Other Media (e.g., computer diskette, CD-ROM)	44%
Video Tapes	62%

Table 6 Distribution Channels for Public Information Publications of Federal Agencies (n=37)

Employers	11%
Direct Mail—subscription	14%
Other (e.g., meetings)	17%
Schools	20%
Public Libraries	37%
Information and Referral Agencies	43%
Consumer Information Center	46%
GPO or NTIS Publication Program	63%
Direct Mail—free	71%
Directly from their offices	94%

Table 7: Percentage of Responding Federal Agencies Employing Various Information and Telecommunications Technologies for Client Services (n=39)

Type of Telecommunications Service	*% of Agencies Providing this Service*	*% of these Agencies Providing Toll-free (800) Number for Access*
Fax to send and receive information for clients	97%	—
Serve clients by phone	95%	43%
Use e-mail in the organization	92%	31%
Use TTY/TDD for the deaf	74%	29%
Have a BBS or on-line service available for clients	46%	—
Use audiotex for client services	44%	53%
Use voice mail	38%	—
Have other electronic services also (see list below)	31%	—
Have Dedicated Operator-Assisted Client Services	28%	50%

- Smartcard & Electronic Benefits Transfer experiments (two reports)
- electronic data products—PC disks, conventional tapes, CD-Rom—available at nominal cost (three reports)
- Postal Buddy—automated change of address terminals
- IBM and ATT order systems, quick service direct order service.

Ninety percent of the responding federal consumer and aging services provide public information by publications. Of those providing such public information, the most common channel for distribution is from their own offices or mail programs. Eighty-five percent of the responding federal consumer and aging services employ media other than publications to disseminate public information. Most use more than one kind of alternative media.

In sum, sixty-nine percent of the responding federal consumer and aging services plan to acquire or implement select technologies for new or improved interactive client services within the next three years.

These initiatives are distributed among a broad cross-section of technologies. Despite the recent passage of the Americans with Disabilities Act, we note that few agencies offered TTY/TDD for the deaf, and none was planning to acquire it.

Table 8: Technologies Planned To Expand Or Improve The Services To Clients (n=27)

TTY/TDD for the deaf	0%
Audiotex	11%
Dedicated operator services	11%
Fax (expanded, improved)	19%
BBS or on-line service	26%
Fax Broadcasting—automated fax distribution	26%
Faxback—fax accessible data banks of documents	30%
E-mail (independent of on-line services)	30%
Voice mail	56%

Conclusions And Considerations About The General Survey

Mary Gardiner Jones, a former US Federal Trade Commissioner who is now president of the Consumer Interest Research Institute, is a strong advocate of advanced technologies for consumers. Like many who see their potential, she has long believed that such technologies can and should transform the nature of social interactions and government services. To her, the vision must be larger, reaching toward technologies that are promised, not yet delivered, moving toward an ideal of public service:

> The most effective delivery format which telecommunications can provide is interactive access to multi-media services, that is, a face-to-face interview from the public's home or public place.... [providing connections] electronically with voice, data and moving images.
>
> In seeking information, consumers need to be able to ask questions, not to do data searches.
>
> Consumers need to be able to talk (not type) to the access device. At the minimum, they need a touch-screen device, and the menus should be icon- driven or provide a human interface who can translate their inquiry into the electronic format necessary.[1]

Whether such technologies exist or are feasible or affordable in the near future is not the important point. When we conceive the future, envisioning the technologies that may come, this demand for ideal systems must always remain in view. Even as we explore the applications of today's technologies, we must extend our demands upon them, asking, as Mary Gardiner Jones does, for *more natural, more comfortable, more usable* relations with information and the technologies that deliver information to us.

Even as we sometimes trade back to our current practices because the new technologies are not affordable or are not sufficiently beneficial to make the cost worthwhile—rejecting therefore technology for its own sake—we must ask: what is the transaction, what is the information, what is the need that must be met and the response desired?

We must shape our technologies to answer that question fully, not to respond to some narrow immediacy. Technologies that are employed merely to perform tasks will yield incoherent segmented systems; they will tend to give us machines that are niched into the organization and become a dependent thing , or a surrogate for the service they were supposed to enhance, not replace.[2] Hence, a voice mail system becomes the inhuman receptionist for a federal agency. A telephone service justifies the closing of field offices. A computer-readable database replaces a publication. An electronic processing system gives preferential resources to those entitlements that it can rapidly complete without pause, creating backlogs of the exceptions, which may remain neglected.

At the beginning, therefore, we must ask what is the nature and the core values of public service. The limits of public service—the crumbling edges of it—were often exposed by the comments of agencies as they considered the implications of these technologies.

A recent conference held by Reference Point and the National Consumers League with twenty law enforcement and consumer interest groups examined how technologies might be applied to improve the prevention and prosecution of telemarketing fraud. The focus of the technology was upon large-scale coordination of consumer complaints, possibly utilizing a national hotline and compiling and exchanging reports among the agencies. Some participants expressed resistance based on a key issue: such a consumer service was unquestionably valuable and worthwhile, but the agencies did not have sufficient staff to process the complaints they already receive; to

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[1] Interview for this study.

[2] This is the classical model—to make a machine do what hands once did, to bring it bear on a task is consistent with the Tayloristic view of work, that structures it into packaged events or outcomes. It is also the way technology is marketed, not as solutions, but as things.

encourage the public to report more would overwhelm them and create expectations that could not be satisfied. In the end, the public would perceive it had poorer service than it does now.

A thoughtful regional official of HCFA mused that existing systems (and indeed the organizations of government) are built upon the predicate of productivity, oriented to the efficiency of the government service, rather than to the desires or needs of the recipient. Otherwise, he pointed out, would not the federal government want to be available on weekends—and evenings? And since the purpose of programs is the delivery of services to persons who are homeless, poor, illiterate, mentally ill, and so forth, would not a responsive service seek to deliver to this population by means that best reach them?

Public service ultimately depends upon the sufficiency, the competence, and the capacities of human resources—and the policies and organizations that support them. The executive director of one prominent nonprofit representing the elderly questioned vigorously whether these technologies were at all worthwhile. She declared that federal services were in decline, and these technologies excused them—agencies diffidently fault "the computer" for their errors; clients get lost in some voice-mail maze looking for someone who has the answer, eventually speaking to untrained staff. If these technologies mean more of the same, she would have no part of it.

Technology Must be Strategically Planned on the Basis of an Agency Mission and the Core Values of its Public Service

The impetus for technological improvement in the past, found in this study as well, has been the objective of productivity—often to avoid labor costs, rather than to redeploy the labor saved to improve service delivery.

Technologies have failed to redefine service delivery because they have not been applied explicitly and strategically for that purpose.

To realize that potential, the agency must reconceive its service delivery, as if it were starting up its activities for the first time. Moreover, it must redefine the outcomes and measures of its mission and bring new technologies to bear upon them creatively.

To Achieve the Maximum Benefit and Maximum Efficiency from Systems for New Client Services, the Systems Should be Developed as Government-wide Investments and Infrastructure.

The major systems proposed for changing the delivery of federal service—a national public information resource; networks for the electronic transaction of income maintenance; networks of health and medical care—are too large and too costly for any single agency to develop and sustain, or even to justify on the basis of its particular mission. At best, an agency may promote a climate for their development while exploiting narrow applications. But the benefits of mature systems, the real benefits of the technology as it is envisioned, require a global implementation—across agency jurisdictions, mixing the values and orientations of different programs and constituencies.

To Effectively Deliver Federal Services, the Government Must Engage the Resources of the Private and Voluntary Sectors.

The major systems that are proposed will depend upon the participation and cooperation of the private and voluntary sectors. Any national public information resource must depend upon the public libraries. Any national network of electronic income maintenance must engage financial and retail businesses in a mutually beneficial strategy. Any national network of medical and health care must support and unify the provider and carrier communities and must seek their joint investment in it.

Introduction to Case Studies on Technological Innovations in the Federal Service

The case studies that follow pursue the themes of the general survey and seek to explore the workings of the broad conclusions we have reached. Strategic planning, for example, is exemplified by the technological initiatives of the Social Security Administration. How the SSA has developed its technology, how it has developed its strategies, and how it has learned from these experiences provides a model for other agencies, not as an exemplar of perfection, but as a living process whose lessons are learned as much from its shortcomings and errors as from its successes. The need for and feasibility of a government-wide infrastructure is the subject of case studies on both the EBT Food Stamp program and the past, present , and future of the Consumer Information Center.

Social Security Administration: Case Study on Strategic Planning of Technology

Social Security technological development has been governed by strategic planning since 1974. The implementation of these plans has been marred, but in spite of the struggles, the technologies have evolved in a consistent direction.

However, the impact upon operations and human resources has been adverse, and technological developments have generally failed to be integrated with operational planning.

The latest strategic plan for SSA seeks to redress these shortcomings. It is the first such plan to lead technology by the direction of the agency's service goals.

Food Stamps: Case Study on Electronic Benefits Transfer Technology

Food stamps provide income assistance to 11 million households; coupons issued for food purchases equal $26.5 billion per year (at current case rates.) The coupon program, basically unchanged since its inception, is costly to maintain for both the government and those who participate in it—banks that issue and process coupons, retailers that "cash" them, and recipients who must obtain new coupon booklets each month. The use of electronic benefits transfer (EBT) employing magnetic stripe cards and point-of-service terminals at food checkout lines promises to substantially reduce the overall economic costs of food stamps, though there may be changes and some increases in the direct costs to government administration. A full-scale national implementation of such a program—with the installation by 306,000 to 527,200 new POS terminals in shopping lanes—would increase the number of such terminals up to 600% and thereby increase the potential market for POS transactions for the consumer economy as a whole. It represents a national investment in a new electronic credit/debit system, reaching far beyond the food stamp program itself. It represents the opportunity for a public-private partnership that may mutually benefit the consumer economy and federal services.

Consumer Information Center: Case Study on Public Information Services

The Consumer Information Center (CIC) was founded in 1974 by an Executive Order to collect, promote, and disseminate public information literature. Its Pueblo, Colorado fulfillment center is a household name, promoted by well-known public service announcements and 16 million copies of its quarterly catalogs. It disseminates more public-interest free and low-cost publications than any other single agency of government. The service is hampered by its lack of status and the decline of publications for dissemination. In spite of these drawbacks, demand for its services is high. Technological and administrative changes could profoundly increase its capacities. With such changes, the CIC could serve as a complete fulfillment center and coordinator for an electronic public information utility, establishing new partnerships with public libraries and others to promote its products, and adding print-on-demand, electronic catalogs, and expanded inventory.

Purpose of the Case Studies

Each case study represent a major issue or agency of the Federal government whose administration affects consumers or older Americans profoundly. Each will illustrate a critical problem of the Federal government, a set of challenges to Congressional policy, and each draws forth a set of concrete and particular conclusions. Each in turn is representative, as it were an example for, a more abstract set of conclusions, pertaining to policy in a general sense.

How should a federal agency undertake electronic service delivery plans? How are strategic plans for information technology generally carried forth? How successful have such plans been in the past? What can be done to make them more successful? What has been the influence of Congress on such plans? What should the role of Congress be?

What are the factors of cost and benefit that should be considered in assessing the value of electronic service delivery?

When electronic service delivery requires systems that need government-wide support, or have interagency applications, how should those systems be planned, implemented and managed?

We mistake public information and its value to think of it merely as passive byproduct or intellection of government, thinking only of the arcane monographs, or the relentless discharge of data that issue from its myriad activities, or even that are offered for good will. Much public information is intentionally and significantly employed for a program value in its own right, for education and for intervention with behavior—for public health, for changing consumer behavior, for regulating industries, and other purposes. How is such public information dissemination working today? Can electronic delivery services be utilized to disseminate public information?

To answer these, and other questions, is the purpose of these three case studies.

Case Study: SSA's Strategic Plan—Integrating Technology with Service Delivery

The strategic plan of the Social Security Administration (SSA)—*A Framework for the Future*—represents a comprehensive reform of service delivery, integrating novel and innovative uses of telecommunications and information technology, each of which are interesting in their own right. The application of strategic planning may serve as a model to federal agencies that wish to upgrade the technological applications and service delivery of their programs. Furthermore, because of SSA's prominence and the breadth of field services, the technologies it proposes may be a beachhead to provide more universal access of the public to related and cooperating state and federal programs.

This plan is but the latest life-form in an evolutionary chain of plans, systems designs and implementation, the most recent incarnation of recurring ideas and visions of "future" processes that date back to 1975. It is strikingly similar, as will be seen, to its progenitors. By a persistence, even as each has successively evolved with some important differences, these plans have all kept a certain consistency of focus and have largely succeeded to faithfully realize the objectives of that original plan. At the same time these plans have often critically failed some of their own expectations, and have continuously struggled to survive.

They are a life-form which—in the Lamarckian sense of evolution—have learned from their experience to change itself from within, perfecting their own potential. But they have also been forcibly pressured to adapt—in the Darwinian sense—often having been made to yield to choices not of their own making because of a hostile environment

Innovations for Federal Service

Backdrop for SSA Strategic Planning

At the annual budget hearing for SSA in 1971 the Chairman of the House Committee on Appropriations for Labor and HEW, William Natcher, paused to compliment Robert Ball, then Commissioner of SSA:

> "I want you to know, Mr. Ball, as one Member of Congress, I am of the opinion that you and your associates operate an efficient agency, and if all of the other administrations and agencies in our federal government operated as efficiently and well as yours, we would have no trouble."

This was no genteel syrup from our distinguished southern Congressman from Kentucky, who is now serving this committee as its Chairman. It was the consensus of Congress, as he noted, and too, the general faith of the public that SSA was the best of federal agencies. It was an accolade that it deserved. SSA was a "model" agency in its public service and especially in its application of advanced technology.

Yet over the next 20 years, as SSA seemed to struggle with its workloads and its operations, its systems and its mission, even Mr. Natcher would change his mind and today SSA has a reputation for diminished public service, and seems to be an agency under great stress and is no longer the exemplar it once proudly was.

A large part of this decline is political: deep staffing cuts which GAO has described as "arbitrary"; reductions in program benefits and changed public attitudes about their Social Security because of the increased FICA tax-burden and the persistent uncertainty of its fiscal solvency; massive purges of the disability rolls (that were unpopular and eventually reversed by Congress and the Courts); and instability in SSA management and leadership. We will not want to diminish these things in our analysis. The political realities which influence federal agencies often overwhelm planning, as we will see.

Yet the strategic planning of SSA and the ideas it contained about technology and its uses—ideas which are typically the unspeeched assumption in technological solutions such as electronic service delivery—were also responsible for what happened. In some essential ways the future of SSA was seeded in these plans, like a genetic disposition in this and all future strategic plans.

In an ironic convergence of fate, the first strategic plan for SSA was made urgent by rising workload burdens caused largely by the undertaking of Supplemental Security Income (SSI), yet perhaps would not have been conceivable or feasible unless that program had been undertaken.

SSI is a means-tested income assistance program for the elderly and disabled under Title XVI of the Social Security Act, which formerly had been administered by the states. To make the program more equitable across the nation and improve the benefits for most, the Congress nationalized administration and standardized the benefits and gave it to SSA to administer in 1973. The program demanded wholly new work processes. Specifically, it required for the first time that SSA must have local offices take full responsibility for case management and administration. In the past the field offices were largely intake facilities, and the processing and authorization of payments was handled by six large-scale processing centers, warehouses of files and concentrations of expertise and facilities for that purpose. SSI now meant large-scale decentralized processing, using thousands of remote terminals, and requiring the largest on-line network in the world.

Technologically and organizationally it was a mammoth undertaking, and it did not go well. Late changes by the Congress put the systems and program at risk, and caused millions of dollars in overpayments and underpayments that hurt recipients and SSA service for many months into the first year. While Mr. Natcher was friendly and willing to give Mr. Ball all the staff he wanted, staff alone could not handle the problem; simply recruiting, training and housing the staff that was on hand was more than the agency could handle; the agency seriously underestimated the staff it needed for SSI.

After the need for more staff was clear, increased staff was resisted. Government-wide staffing constraints at the time and a lack of confidence in the SSA administration of SSI contributed to the resistance. During this period, SSA suffered a general decline in its performance, not the first in its history, but one of magnitude and protraction that it had never seen before. It was demoralizing. Workloads were unmanageable. Overtime was mandatory for large numbers of staff. Claims processing times went longer; post-entitlement events went unaddressed or were untimely processed. Installing more computers to take up more capacity seemed not to slake the demand. Adding staff was not acceptable to the "higher authority." The situation was a looming crisis that portended utter failure for SSA.

The Master Plan—1975[1]

The *Master Plan* originated, it is said, from the White House, as a bold and somewhat controversial plan to fundamentally alter how SSA did business.[2] It came of necessity and opportunity—necessity because workloads could not be affordably met by unlimited increases in labor; and opportunity because a visionary application of information technology (inspired by the new SSI processing) could very significantly mediate those costs, though some technologies were not yet even fully conceived, let alone procurable. Applied technology would indeed be critical but it was the fundamental *redesign of the work process*, mediated by the technology, that was the real answer.

> "The Social Security Administration is faced with the need to redefine its processes if it is to cope with ever-increasing workloads. Through the years, as new programs and new responsibilities have been assigned to it, SSA has improvised and patched in an effort to continue to be responsive to legislative mandates and the public's needs....
>
> "The not unexpected result of this ad hoc approach is a systems which in many of its aspects is unwieldy, uneven in quality, and increasingly vulnerable to breakdown.
>
> "The conventional methods of dealing with the problem—infusion of more personnel and more machines—are becoming increasingly questionable in terms of their cost effectiveness and in terms of higher authority's capacity to and willingness to provide manpower and other resources of the magnitude that will be required. Projections indicate that staff requirements will continue to grow to higher and higher levels unless the basic SSA process is modernized....[3]
>
> "SSA has reached the point where it is now only marginally capable of meeting its service delivery responsibilities. Failure to meet computer processing schedules is becoming an increasingly serious problem. Even more serious is the decline in the quality of service provided. This has resulted in criticism from the public and Congress and a general decline in confidence in SSA's ability to administer effectively the programs for which it is responsible.
>
> "During the past decade, SSA has had to deal with an unprecedented series of program and mission expansions. The need to react to legislative initiatives with very short lead time has severely inhibited SSA's ability to plan and implement systems and process refinements in a thoughtful, orderly fashion.
>
> "Moreover, a projection of future workloads and related administrative costs clearly demonstrates that the current process, already under stress, will be unable to support the magnitude of growth expected. A comprehensive reexamination of current processes and the development of a totally new plan for the future SSA process are necessary if the agency is to continue to perform its program responsibilities."[4]

The new vision would be a national network of local terminals, linking all employees to electronic processing and electronic service delivery. It was not the old vision of more people pushing the same paper, or more machines (chugging out batched processes).

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[1] For primary sources see: Master Plan for the Development of the Future SSA Process, Social Security Administration, June 1975. Also see: Toward a Design Concept for the Future SSA Process, April 1977.

[2] Original impetus of the Master Plan was from a letter of President Ford to the Commissioner of Social Security at the end of 1974.

[3] *Master Plan*, prologue.

[4] *Master Plan*, pg. i-ii (summary)

It would be integrated data systems, linking all work processes and data fluidly; not the old segmented factories of input, output and storage. It foresaw changes to all of SSA's major workloads:

- earnings records
- Social Security enumeration
- retirement, survivors and disability (RSDI) claims
- post-entitlement for RSDI
- Supplemental Security Income (SSI claims and post-entitlement

It would change all of them fundamentally, aiming for a "paperless" process, one that would eventually lead to substantial reduction in workforce requirements.

> "The problems occasioned by increasing workloads are becoming less amenable to solution by increasing staff and computer capability. Improvisation must give way to basic structural changes in the way SSA performs its responsibilities if it is to continue to function in an acceptable fashion."[1]

Effects of the Master Plan on All Subsequent Planning

Although the *Master Plan* was eventually frustrated and abandoned, the basic model for the "Future Process" which it articulates was preserved in most of its particulars by the subsequent plans. Long after the *Master Plan* was lost in the archives, it still spoke out from the words of later strategic plans, resonant and intrinsic to them on three levels.

First, the *Master Plan* defined for SSA a new vision for work—seeing work processes transformed by office automation and information technology, and more particularly seeing what was then a revolutionary form of automation: the office of electronic delivery services with the one-to-one relation of client to terminal-interfaced interactive processing. Work and workers in this new process would be changed forever; jobs would be eliminated; a VDT would become a ubiquitous tool of the desktop.

Second, the *Master Plan* set forth and promised to achieve a specific set of major objectives for a "Future Process" [see sidebar on following page] that subsequent plans would explicitly undertake. Although they were undertaken under many different projects, over time spans that made the connection between them seem remote, these objectives have all been largely obtained by now. Virtually all the key systems and work process goals of the *Master Plan* have been achieved through the continuity of plans and design that followed its demise.

Third, the *Master Plan* first set forth the cardinal policy to purchase technology by work year savings. The watchwords would be "curtailing" labor costs and "maximizing" efficiency and the utilization of advanced technology.

> "Broadly stated, the basic goal of the design effort is: To design and develop a process which will serve SSA through the 1980's and which will maximize efficiency, curtail constantly increasing personnel requirements and administrative costs, improve service to the public, and maximize the utilization of the most advanced technology."[2]

These two goals—cutting labor and implementing new efficiencies by technology—were thus inextricably linked by the *Master Plan* and would become the basis of expectations and policy in all planning that followed, in Congressional policy and in the policy of OMB which supervised the SSA budget.

In the scope of the *Master Plan*, this linkage was aptly called the "Payback." The plan would cost about $561 million (about half of which went to hardware), and for a time the manpower of SSA must rise to meet the burden of systems development and tandem processing, as old systems yielded to new. But dramatically in the mid-1980's, the SSA staff requirements would drop by 15,600, mostly in one year. The system investments

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[1] *Master Plan*, pg. 4.

[2] *Master Plan*, pg. ii (summary)

would then be "paid back" in less than two years by the savings to SSA because of reduced staff.

That clients might be better served by the "Future Process" was an explicit goal, but it was secondary to the cost reductions represented by labor savings. The explicit goals of the *Master Plan* for service improvement went predominantly to reduced processing time for targeted work loads and processes. Some of these time reductions would in fact improve delivery to the client, such as reduction of time it takes to get a new Social Security Card. Others, like the improvement of the time it takes to process a retirement claim, would have little or no affect on clients, although the old system was more labor-intensive and time-consuming, the payments usually got to beneficiaries in a timely manner. These sorts of savings were strictly internal and administrative. This is not to diminish them, but it is to distinguish them from the later focus of SSA strategic planning that began to look at quality and client satisfaction in its objectives, rather than merely administrative efficiency and cost-reduction.

However, under the visionary influence of the *Master Plan*, these viewpoints—on labor savings, of technology bought by labor savings, with focus on administrative efficiencies—dominated the design and commitment of the "Future Process", as it now was carried out, and it would dominate strategic planning and technological innovation for the next dozen years.

Systems Modernization Plan—1982

The *Master Plan* was frustrated by several factors, mostly political. The change in Presidency in 1976 brought a new Commissioner and new views of SSA by a newly organized Department of Health and Human Services. The systems plan the new Administration inherited was tossed out, as written, though over time its elements reemerged in other, more narrowly cast and pragmatic projects. The flaw with the *Master Plan* in the new view was that it lacked attention to the problems of the software and database design; the rapid procurement of hardware seemed to these critics a headlong and costly rush; Congress too was skeptical of the *Master Plan* and some technical doubts had been cast upon it by the National Academy of Sciences; much of it was delayed, while the whole could be rethought.[1]

During this time the attitude about staffing did not change. Reducing or containing federal personnel was a government-wide goal of the Carter Administration, and SSA

Major Goals and Objectives of the original *Master Plan*

- Integration of processes and facilities, across program lines to permit service on a "whole-person" concept in contrast to separate systems for each program.
- Provision for direct entry of data at its source into the automated processes, and online editing capability.
- Continued reliance on person-to-person contact through local district and other offices for the delivery of beneficiary and claimant services, but with a deliberate objective of complementing and enhancing this arrangement with other modes of communication.
- Online and/or real-time capabilities, where justified.
- Update and response times based on predetermined processing goals and standards.
- Elimination or major reduction of hardcopy records, including wage record certification and claims folder, for other than archival purposes.
- Automated entitlement decisions and generation of notices.
- Direct deposit, including electronic fund transfer, as a fundamental concept of the new payment system.
- An examination of SSA management and statistical systems and data requirements with a view toward deriving needed data as a byproduct of SSA operational processes.
- The extension of automated support to activities such as benefit estimates, procedural instructions, and information and referral services.
- Provision for annual reporting of earnings (subsequently legislated in 1978)
- Reduction of manual effort by automating various manual processes.

[1] Even during this period of indecision, some of the objectives of the *Master Plan* continued in implementation. The Congress enacted statute to eliminate quarterly wage reports and require SSA to process IRS W-3s, as anticipated in the *Master Plan*. Elimination of magnetic tape storage was begun, and experimentation with new automated processes began. A new claims automation system for RSDI was completed.

was a large and highly visible component of what many thought was a swollen bureaucracy at HHS. In 1978 the Civil Service Reform Act contained a government-wide manpower ceiling that continued staff constraints, though SSA had sought and gotten permission to increase its staff.

The combination of staffing constraints, which seriously affected operations but also programmer and systems personnel, and the failure to acquire hardware that was needed brought SSA to a point of total systems failure on the eve of 1980 election. Literally, SSA saved itself from failure to timely process the June 1980 cost-of-living increases by a matter of minutes before the midnight of the day before the checks were to go out.

It could not face this crisis again. The systems were degenerating rapidly.

When President Reagan took office, he immediately froze federal staff. He also appointed Jack Svahn to be Commissioner of SSA who, like his predecessors, found the systems in shambles and was likewise persuaded that his predecessor's plans had failed to address the problem.

Now the problem was simply capacity; software could wait. Regardless of the software and database issues (which he soon found were considerable—documentation was so poor that whole subsystems were said to be impossible to maintain), the immediate emergency was for large-scale acquisition and rapid deployment of new capacities for processing and for telecommunications, and the orderly completion of new storage devices—as called for in the *Master Plan*, magnetic tape was to be replaced by disk devices. Congress, chastened by the consequence of delays and alarmed by the situation, approved large sums for "systems modernization".

Taking some of its conception from projects that had spun off of the *Master Plan*, and from a baseline of what the "Future Process" must be, the Systems Modernization Plan (SMP) forecast an ambitious and rapid period of procurement and conversion to new systems. Altogether it intended to spend $479 million on hardware, development and telecommunications alone over a the period of 1982 to 1987—just two years shy of the original goal for the *Master Plan* and in half the time.

It did not fully meet its goals. Capacities were restored and SSA rapidly retreated from its crisis with systems, but many of the software and data management problems remained and remain to this day. On the other hand, the original "paper-less" process envisioned by the *Master Plan* was put back on track and by 1987 SSA had a newly automated claims process for RSDI and would have newly automated claims process for SSI by 1990; terminals now sat on desks of claims and service representatives, and the jobs of some data technicians were effectively eliminated as originally envisioned by the *Master Plan*.

Yet it was a shallow automation, in that it channeled intake and input into a new process, but channeled that data into old data processing to complete payment and notice transactions. The goal of fully integrated, seamless systems was still far away.

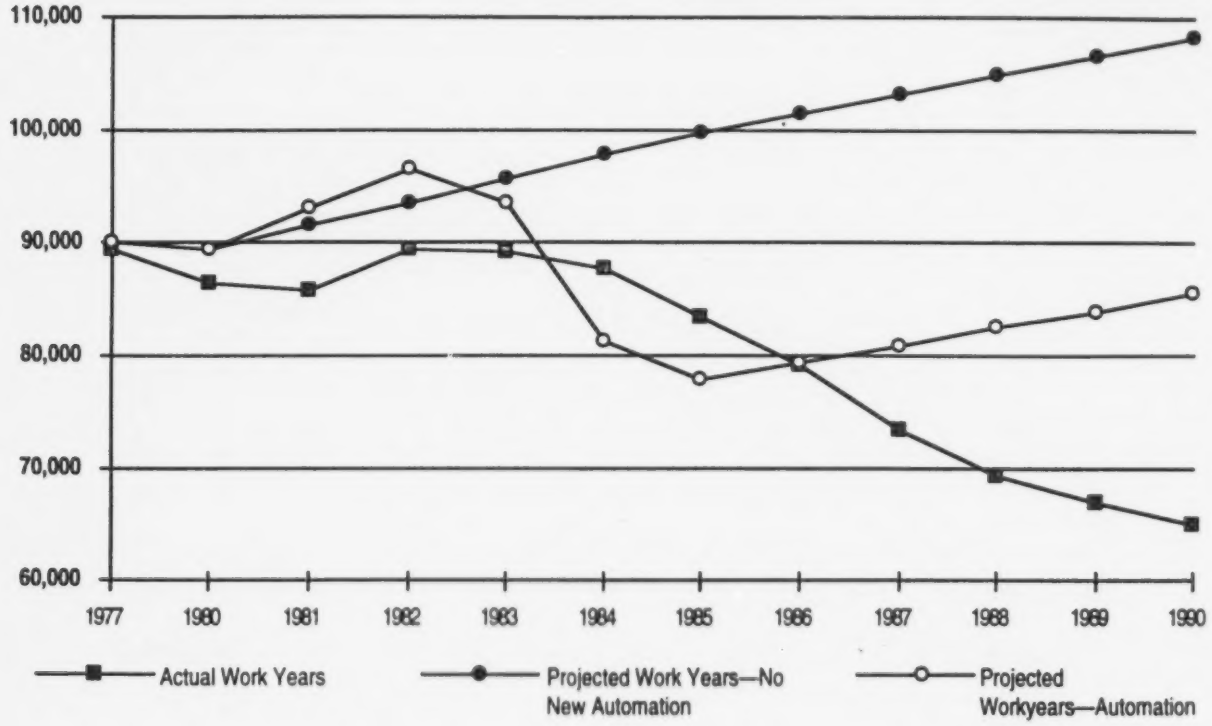
It was a costly investment. By 1987 it had asked for $601 million, and had obligated $335 million (about half of which was hardware). It had spent an additional $373 million over this period on maintenance of systems and another $123 million on additional telecommunications. The Congress began to inquire about the purchases: how well did this system work? Why was it costing more than projected? Why was it not achieving all of its goals?

The Payback

In that context, like an old debt that came due, as if to demonstrate the labor savings promised by the SMP (and the original *Master Plan*), the Administration pressed to begin large-scale staff reductions for SSA.

The reductions were thoroughly and convincingly justified. In its FY 1993 justification for annual appropriations, SSA would declare:

Chart 9 The Payback—Actual SSA Staff Cuts *versus* Original Projections With No Automation *versus* Projections For Staff Cuts Under The Original *Master Plan*[1]



"SSA has been able to operate with reduced staff while improving service in recent years largely due to efficiencies through automation and systems modernization." (*Justification for Appropriations*, FY 1993, pg. 110)

It would congratulate itself that:

"Major improvements in productivity and services have been accomplished through SSA's ongoing management initiatives and by reducing or eliminating manual processes through the use of automated data processing and modernized telecommunications systems. Accordingly an Agency that once relied on a very large workforce, now has a smaller, more efficient staff that relies increasingly on modern technology to deliver quality public service." (*Justification for Appropriations*, FY 1991, pg. 94)

The Congress, preoccupied with the intractable problem of a burgeoning federal deficit, was not inclined to argue with cost savings.

Cuts were dramatic, immediate, and continued year-after-year. They may have been even more rapidly deployed but for a decision that SSA would not lay-off any of its current workforce, and would rather utilize attrition to downsize. A goal to cut 17,000 work years was set and over the period 1983 to 1990 SSA reduced its work years from 89,424 to 65,025; that is, SSA exceeded its goal. Some of the cuts may be attributed to general budgetary pressures and government-wide policies; in 1985, for example, a cut of some 1,200 work years may be directly attributable to Gramm-

[1] Source of this data is from the 1976 implementing document for the Master Plan—*Toward a Design Concept for the Future SSA Process*; actual workyears are from the Annual Reports of SSA (1977-1992).

Rudman-Hollings requirements. But the majority of the cuts—the 17,000 work year cut—came directly from OMB as a requirement, as the Payback for modernization.[1]

The Payback had been anticipated since the *Master Plan* and each justification to Congress for the various iterations of automation—whether in parts, like the annual wage reporting process, or in a strategic whole, like the SMP—was accompanied by the explicit goal to reduce personnel. The original projections, as illustrated in the above chart, foresaw that SSA workloads would drive up staffing steadily, even though historical productivity gains would help keep the trend down. SSA productivity in fact had been historically good and SSA would continue to report productivity gains annually as a part of its justification for constrained or reduced staffing.

But productivity gains alone would not lower the staffing requirements. The *Master Plan* projected that the automation it envisioned—subsequently adopted and implemented by the various plans and projects that followed—would be the only way to bring down staffing requirements. It believed, that impact would be tremendous—a scale of staff reductions of 20% in a period of just 18-24 months after full implementation. It would be a productivity leap that was the most spectacular SSA had ever seen, although in truth that gain would infuse SSA over several years before the Payback was exacted. SSA would carry redundant staff as it prepared for switching to the Future Process.

What actually happened defines a dramatic counterpoint. Where under the original projections, staffing would drop and then resume its "normal" growth rate, SSA's actual manpower kept dropping. Compared to original projections for 1990, SSA requirements ended up more than 20,000 work years or almost 1/3 less than what it expected it would need.[2]

This gap—between what is and what was expected—represents the effects of other policy and management initiatives. Automation, as originally envisioned and effectuated, would not and did not generate the labor saving to account for this variance. Although some of the original expectations for labor savings would be exceeded, others would not be met and workloads, especially for disability, would be higher than expected.

The Payoff for the Payback

The staffing cuts, though expressly based upon the new automation and technology, were facilitated and accelerated by changes in workloads due to changes in their management. Faced with the OMB mandate for the Payback, SSA undertook "management initiatives" to reorder and redefine workloads, eliminating some and changing others.

Administrative expediencies were not new. Deferring workloads, redefining standards, re-prioritizing processes—these had been needed from time to time whenever Congress gave SSA a large new task: such as when farmers were added to Social Security ranks in the late 50's, or when Medicare started in the mid-60's. In the early 1970's when the Black Lung program was given over to SSA, the added burden took away disability examiners who were obliged to give up work on continuing disability reviews (sowing the seeds for future Congressional concerns that there were ineligible persons on SSA's disability roles and for the consequent massive purges of the 1980's). When SSI hit the field offices of SSA, all workloads suffered and SSA again deferred and redefined its expectations for many tasks, notably the investigation and correction of earnings discrepancies, and again continuing disability reviews.

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[1] *Social Security Administration: Stable Leadership and Better Management Needed to Improve Effectiveness*, General Accounting Office, March 1987, pg. 103.

[2] Work year projection were taken from the Master Plan. Actual Work years were reported in *Annual Reports of SSA*, dated 1975 through 1991.

But ever since 1974 when the SSI program began, these administrative expedients became routine and they mounted. Staffing would never again be adequate.[1] Automation had not yet been completed so as to provide significant labor savings by which to return to deferred work or restore diminished standards. The agency had no choice but to trim its workloads by changes in its administrative standards and requirements. These new "efficiencies" justified, at least on paper, the explicit reduction of staff or loss of anticipated growth to meet rising workloads. Stated always in positive terms as "efficiencies", they belied the fact that SSA was consciously and deliberately changing its service delivery and the nature and quality of its public service.

But it was not systematic, and often the . . changes were thought to be temporary, only to become institutional over time. It was indeed expedient and necessary. The mounting workloads required relief by such actions because the workforce could not carry them; the changes in what has been called "management initiatives" was a rational recognition of resources, brought on by imposed limitations of "higher authority". It was not, however, a planned redefinition of service. It was all tactics, no strategy was in it at all. It was, like the SMP itself, sheer survival.

[1] Studies on the problems of SSA staffing have always invoked paradoxical findings. Some studies honestly show potential for labor savings when work is examined in isolation. Other studies show SSA workplaces are overwhelmed, that workers are overworked and that pent-up workloads nag the administration. GAO in several of its reports and the Grace Commission in 1982 declared that SSA was overstaffed, especially in field offices where it was argued that "industrial engineering" task-analysis demonstrated that work could be performed at a much faster pace than it actually was, based on clocking samples of some workloads. However, no study has ever comprehensively measured and evaluated SSA workloads and SSA acknowledges that its workload measurements target priority workloads for reasons of control and performance standards, and do not account for all that is expected of staff or the agency. Because these same workload measurements are the basis for staffing appropriations, SSA prejudices the record against itself by failing to demonstrate the full scope of its responsibilities.

2000: A Strategic Plan—1987

Congressional concern about SSA's public service had been rising since the early 1980's, even while it accepted the cost-savings and budget reductions that SSA undertook. At the same time that doubts were renewed about its systems modernization (its costs and its effectiveness), Congress found itself challenging a number of management initiatives undertaken by SSA—new policies on overpayments, proposed reductions in offices, policies on disability programs, and others.

In 1987 GAO completed and issued a broad-based management study on SSA, undertaken as one of a series of such studies of federal agencies. It represented a summing up of GAO investigations and studies of SSA, which had numbered in the hundreds over the last dozen years, but it was also an attempt to critically evaluate SSA as an organization.

For purposes of this case study what we should note in this GAO evaluation is the finding that SSA's planning process had broken down.

> "SSA lacked a central agency-wide operational planning process for developing long- or short-range plans. As a result, SSA's components did not have a good sense of overall agency direction because existing planning efforts have been narrow in scope and did not effectively integrate related activities. This created problems in implementing major initiatives, such as SMP and the 17,000 staff cut, and in addressing problems."

This is an ironic finding, given the evidence that SSA had in fact implicitly adopted a *Master Plan* which governed their vision and development of automation. Yet it must also be pointed out that that Plan had been abandoned and that no explicit plan was raised in its place. The finding also specifically points to "operations"—the place where the work is done—and suggests that changes to it were not "planned" with coherence and strategy.

Here the GAO finding is somewhat disingenuous. While GAO called the 17,000

***2000: A Strategic Plan*—Excerpt**

"During the next ten to fifteen years, American society will undergo rapid and significant change.... All these changes will interact to alter, perhaps dramatically, the structure of our society by the year 2000. Faced with prospects, opportunities and challenges presented by a rapidly changing world, and the importance of the Social Security programs to our present and future society, SSA must actively plan for the future....

"This document is the first effort by the SSA to prepare a coherent, long-range strategic plan—a plan that, beginning today, establishes the broad directions to serve the America of the Year 2000. To develop this initial plan we have had to look outwardly: What are the changes, opportunities and challenges we must anticipate and deal with?

"SSA can respond to forecasted changes in a variety of ways. The scenario chosen as the basis for the SSA Strategic Plan describes, from the point of view of an observer looking back from the Year 2000, the changes proposed for SSA between 1987 and 2000. SSA has simplified its programs, eliminated the retirement test, simplified computations and made Social Security number issuance a byproduct of the birth certificate process. SSA transacts business several ways to the convenience of the customer. Service to the public is primarily by means other than face-to-face contact with an SSA representative. Modern technology encompasses all of SSA. Rapid and dramatic technological changes have opened up almost unlimited opportunities for how work can be done efficiently and effectively."

cut imposed by OMB "arbitrary", it did not acknowledge that the operational adjustments to such an "arbitrary" cut are virtually impossible to be "planned".

Yet the criticism made strong effect on SSA, even while SSA itself had begun to realize and accept the cuts and recognize that operations must change dramatically, perhaps organizationally, to cope with them and that planning must now regain control of the changes that had been forced upon them. Since 1985 the Deputy Commissioner for Operations had been working on a set of strategic ideas about how to fundamentally alter work processes. This, plus the stated commitment of the Reagan Administration to diminish the size of SSA, led to a series of future-oriented conceptions.

When a new Commissioner entered SSA, Dorcas Hardy, in 1986, the need for new planning was at the top of her agenda. She immediately established a new planning staff that reported directly to her and commenced to develop a full strategic plan for SSA.[1]

This plan, however, would deal directly with operations and service delivery. The work began with a series of high-level "futures" sessions in which the senior staff were presented with expert forecasts and then began to develop images of desirable characteristics for SSA in the year 2000. It took much from the brainstorming that had been ongoing, but it also added new subjects and more importantly it brought a framework to the analysis and unified the participation from across SSA components. Scenarios for the service delivery, technology and organization were developed and a menu of options were constructed from which choices may be made. Finally, after a retreat with her senior staff, the Commissioner announced and released at the end of 1987, *2000: A Strategic Plan*, in which the framework and recommendations for SSA were set forth.

Altogether there were 29 specific items of action, organized into categories of programs, service delivery, technology and organization. While the *Master Plan* and the SMP had contained implicit assumptions about these concepts, only technology was emphasized by them. The effects upon employees, the changes needed to service delivery and so on were secondary or byproducts to the central element of the plan. The *2000 Plan* was the first to explicitly and systematically address the other constituent elements of the change that technology is only one part of.

The *2000 Plan* failed in its implementation. Like its predecessor plans, a change in

[1] This direct responsibility to the Commissioner and overarching scope of responsibility was similar to the original planning and management organization set up for the *Master Plan*, and which was lacking for intervening plans and the SMP.

Administration broke its momentum.[1] But the Plan also was troubled by its grab-bag collection of ideas, each of which may be valuable, but many of which seemed to lack a clear focus upon overarching goals. In short, the ideas for changes seemed to be their own purpose. They were not a coherent and comprehensive vision of the agency.

Moreover, there remained within them the implicit linkage of the Payback: these changes would mean that SSA needed less staff; they meant to justify staff cuts; it almost seemed that this was the sole purpose. Indeed some of them found there way into justifications for staffing cuts in the following years, becoming mixed with the general justification for cuts already rationalized by the advances of the SMP.

The *2000 Plan* therefore begged the question of service delivery, more than it defined it. It raised that question, not altogether intentionally, to new levels of discussion and accordingly it altered strategic planning of SSA fundamentally.

The question of service delivery was especially heightened by the efforts to implement elements of the Plan that tried to change service delivery immediately in substantive and, as it proved to be, controversial ways. Still holding to an objective to reduce the number of field offices, but stymied by Congressional opposition, the SSA redirected its efforts to "alternative service deliveries." It would channel public contact from field offices to more telephone-based services, and thereby alleviate the workloads upon the field offices, perhaps to justify closings or reductions which had otherwise failed, but certainly to accomodate and further justify gradual staffing reductions. This was to be accomplished by a national 800 number which would route callers to "mega-teleservice centers" (TSC). It would be reinforced by "requiring" SSA clients to schedule their visits to SSA offices by appointments. The intentional design was to discourage office visits and to handle work by phone wherever possible.

In a sense the effort to replace field offices with telephone service became a market test in consumer preference for service delivery. The consumer—Congress and the public—demonstrated its displeasure with some of the changes and made known its preferences, as revealed by this feature in *Modern Maturity*, the official publication of the American Association of Retired Persons, in June 1989:

> "People are finding it harder and harder to get information out of the Social Security Administration. There's no mystery why. A five-year program to eliminate 17,000 SSA jobs has slowed handling of service claims in agency field offices, say employees, while a telephone hot line designed to solve that problem has succeeded only in compounding it.... While witnesses [to two Congressional hearings on the subject] said that two- and three-hour waits for personal interviews have become commonplace in short-staffed agency offices, much of their testimony was devoted to problems caused by a toll-free telephone service instituted last October.... Among other things, witnesses said, the 800 line becomes so overloaded on peak days that calls are automatically routed from the city of origin to far-away offices which in some cases are not qualified to handle them. Whenever calls in one local office get backed up, they can be routed automatically to one of the 37 teleservice centers. But that has exacerbated the staff problem, said SSA employees, because the agency assigns personnel from field offices to the centers, leaving the local units understaffed on peak days. Field office administrators who testified at one or both hearings complained about the staff cuts, which totaled 13,100 through fiscal 1988, saying they have reduced effectiveness and caused serious morale problems... Donald Singewald, district manager of the SSA office in River Falls, Mass., told the House Committee that 'establishment of an 800 number has become the No.1 priority of the agency.' As the result, he said, 'allocation of staff to the current proposed 800 number answering centers comes at the expense of field offices.' But the SSA is determined to stick with the system. The 800 number 'is a terrific service,' said Commissioner Hardy, and it will be expanded to cover the entire nation....."

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[1] Another finding of GAO's major study on SSA, cited above, is that much of SSA's problems can be traced to the unstable leadership it has had; especially with the frequent changes in the position of Commissioner. We must continue to doubt that planning can be effective if leadership frequently changes.

Today SSA maintains a nationwide 800 number and operates 4 mega-TSC's and staffs them and the other networked smaller and local TSC's with 4,000 employees. Employees continue to shift from other offices to man the facilities, although much of the field office telephone and direct services were restored after public and Congressional complaints. Problems with call management continue, such as occasionally overloaded services, but as a service delivery mechanism it is now permanently established and its extension, to include a wider range of services such as claims taking, will continue.

The service delivery concept that was initiated by the 800 number has begun to reshape thinking about service delivery. The concept of person-to-person service, which was at the heart of SSA's field office organization and its mode of operations with defined service areas and its emphasis on community presence, has been recast by technology and this design.

The Social Security Strategic Plan: A Framework for the Future—1991

The new Commissioner for SSA under newly-elected President Bush was Gwendolyn King. Like others before her she wanted to imprint upon the agency her view of what its direction should be. She also came into the agency at a time of growing Congressional displeasure with the agency and public dissatisfaction with its services. Employee morale, as she would find through surveys, was poor and clearly the staffing cuts had gone too deep, as she would later publicly acknowledge.

For Commissioner King therefore the planning process now faced several other requirements: to restore employee morale and heal the alienation which they felt and to re-address the fundamentals of the agency—what are its important public services? How do we define the goals and standards for these services? How can we fulfill those requirements with our resources? On what basis might we justify more?

Even before a "Future Process" can be defined, a reassessment of the agency must take place, she believed, and any strategic plan must be oriented directly to its mission, services and goals, not to futuristic technology or even to efficiency for its own sake. Technology and administrative efficiency must be framed by the answer it gives to the question: what does this do for the client?

A new strategic planning process was begun, and it built itself much upon the work that had gone before it. It drew upon much of the same staff and many of the same ideas, but it started freshly and with new direction. Like the previous strategic plan, this required taking stock, assembling ideas and building consensus. This time the reach of these activities was greater; this time more employees would be directly involved, a greater participatory approach would be attempted. This time the plan would start from statement of mission and service goals; technology would be addressed only after those were addressed.

The resulting plan—*A Framework for the Future*—is an intentionally different document from its predecessors. As the former began with the statement that SSA must look outward, this began with a statement that SSA must look inward and first define the heart of its values and mission. A brochure version has been printed and widely circulated among employees, unlike any of the previous planning documents; an introductory "message from the Commissioner" is addressed directly to SSA staff:

> "This strategic plan is a key component in our investment in the future. It takes us into the 21st century, creating a working blueprint for us to follow in ensuring that a strong, competent SSA continues to provide the nation with efficient and courteous service. This strategic plan also serves as a tool with which we establish a common understanding of Social Security's mission and a renewed sense of direction for our managers and employees.
>
> "In creating the strategic plan, fundamental questions had to be answered.... This line of questioning did not lead us toward envisioning

major program and policy changes, but rather toward finding ways of making our policies and processes more helpful, more meaningful and more relevant to the public we will serve in the 21st century. Because SSA is an agency whose principal mission is service to the public, it became obvious that a key to our strategic plan was the development of a clear set of service-delivery goals and objectives."

Whereas the *2000 Plan* launched a handful of senior executives on an imaginary "balloon trip" into the future (as the staff described it) and looked down upon all the surface images of possibility and selected "images" of the potentials they saw there, the *Framework* gathered staff suggestions and ideas from a broad cross-section of present-day views and made these the basis of over 3,000 images of change.[1]

Whereas the *2000 Plan* had labored only incidentally to describe SSA's mission and seemed to confuse mission with goals ("provide the best possible service to SSA's customers"), the chief labor and outcome of the *Framework* was the redefinition of SSA's mission and the articulation of clear goals to fulfill it. The *Framework*, unlike any such plan in the past, explicitly links mission, goals, and action and seeks to make SSA accountable to them and to the strategic plan as a whole. This has never before been so attempted, and it requires changed organization and changed management.

The planning process itself has become institutional and renews itself not just annually with the governing cycles, but continually, in the ongoing implementation of the *Framework*. The planning staff continues to report directly to the Commissioner, but the new process has taken on a wider responsibility to unify all agency planning and attempts to integrate these plans and make them consonant with the strategic plans of the agency as a whole and others that might be dispersed across components. It began this unification by coordinating the existing cycles of planning—budget, research, legislation and information resource management—and assuring that these are consonant with the *Framework* as it develops. Once the *Framework* began to dictate and direct operations and organizational goals itself, the Plan itself began to generate

***The Social Security Strategic Plan: A Framework for the Future*—excerpt from the Executive edition.**

"The Mission of the Agency: The mission of SSA is to administer national Social Security programs as prescribed by legislation in an equitable, effective, efficient and caring manner.

"Agency Goals: SSA has established three broad fundamental goals (and a series of related objectives) that define the results we expect to accomplish as we fulfill our mission. The Agency goals are:

- To serve the public with compassion, courtesy, consideration, efficiency, and accuracy.
- To protect and maintain the American people's investment in the Social Security Trust Funds and to instill public confidence in Social Security programs.
- To create an environment that ensures a highly skilled and motivated workforce dedicated to meeting the challenges of SSA's public service mission.

"Agency Commitments: Agency commitments are statements of organizational philosophy that help describe some of the most important characteristics of our working environment now and in the future. Honoring these commitments is critical to the accomplishment of our mission. SSA is committed to:

Commitments to the Public—Public Participation, Program Improvements, The Human Touch, Person-to-Person Skills, Equal Treatment, Communication, A Balanced Perspective, Service Integration, Helping People with Disabilities Return to Work

Commitments to Effective Management—Deterring Abuse, Controlling Expenses, Using Proven Technology. Quality Approach, Change Management

Commitments to SSA Employees— Employee Input, Employee Development, Positive Work Environment, Teamwork"

[1] This approach is a well-respected and successful process by which to envision the future, known as "preferred futuring." That it may seem remote from the real world is not a just criticism of it as a methodology. However, some observers have criticized SSA's planning for not engaging more constituents in the process, and perhaps this approach tended to isolate the planners from that constituency and made them seem "remote" indeed.

implementation planning. Managers have been designated for each of five priorities that the Plan is divided by, who in turn coordinate task-managers representing the responsible components. A total of 110 "tactical plans" have been prepared by these and are monitored centrally and by each of the Priority Managers, as the strategic plan moves forward.

Assessment of the State of SSA's Strategic Planning

Remarkably comprehensive as the *Framework* is and imbued with a sincere desire to renew the agency, this plan, like all plans before it, still keeps its present context and also contains the elements of past planning. In so doing it too may seem a disjointed collection of ideas and intentions. Yet strategic plans should not be an abstract document, but must be "living documents"—sometimes tentative, malleable, with imperfect vision of the future, carrying the burdens of present obligations and the lessons of the past. A good strategic plan should embrace what the organization is and has been, as much as what it intends to become.

Thus the *Framework* still carries genetic makeup from the original *Master Plan* of almost two decades ago. The "intelligent workstations" and "networks" envisioned for the future process are the present-day terms and technologies for the original vision of integrated processing out of that time. Yet this plan now also approaches a precipitous breakpoint with past plans, partly because current and horizon technology afford potentials that in the past could not be anticipated, but also because the way SSA looks upon that technology has changed, has been educated by what has happened since the original vision. In short, SSA has learned how the technology of electronic service delivery affects people—employees, clients, and the organization itself. Thus, the *Framework* contains "commitments" to employees, to management and to the public. In the *Master Plan*, and in most of the plans that followed it, these were at best implicit. However,

Tactics in SSA's Strategic Plan— an excerpt from *A Framework for The Future*

"SSA's strategic plan identifies seven basic service delivery goals and corresponding objectives that define the levels of service that we are striving to provide the American public. Although the goals and objectives, as written, imply that we are striving for perfection (for example, the goal for issuing Social Security Numbers (SSNs) implies that all SSN applicants will be advised of their number within 24 hours), we recognize that performance at the "100% level" will be difficult to achieve. Therefore, in the tactical planning process, we will develop more specific, shorter-term goals and objectives that will mark attainable interim progress points. Existing measures of Agency performance, while numerous, do not necessarily provide all of the information we need to determine what our quality of service really is. We will develop new measurement systems wherever we need them so that we can determine our current levels of service and monitor our progress in reaching our goals. The "vision" of SSA's future... portrays how the organization will evolve. It provides an overview of how our work will be accomplished and of how we will deal with each other and the public we serve. In doing so, it suggests the programs, processes and systems that we will need to accomplish our service-delivery goals and to support the philosophy expressed in the commitments the Agency has made."

Service Delivery— Choice of Service Delivery, Volunteer Representative Payees, Service to Non-Beneficiaries, Data Exchange, Consistent Service and Flexible Employee Skills, People Skills, One-Stop Service

Technology— Modernized SSI Systems, Intelligent Workstations, Networking, Multi-Media Conferencing, Decision Support, Electronic Records

Human Resources— Workforce Adjustments, Workforce Makeup, Day Care and Fitness Centers

Facilities And Organization—Community-Based Field Offices, Consolidated Operations Facilities, Positive Work Environment

Quality Management— Do It Right the First Time

because they were not clearly and completely stated, they became secondary to the compelling objectives of the technology itself, the efficiencies that it was supposed to bring, and the Payback due in terms of labor savings and its attendant staffing cuts.

The unanswered question about the *Framework* is how faithfully it will be implemented. Here there are a number of serious troubles for SSA. First, SSA faces again changing leadership—a new Commissioner will be seated who may once again discard past planning and start the agency on yet another course or direction. History reassures us that these redirections maintain much of the past ideas and momentum. But change at this time could disrupt ongoing projects and break the commitments made.

Second, the integration of the planning process is incomplete. The crucial integration with operations and human resource management has not been finished. The plans for these have not yet been fully written or adopted and there is uncertainty about how these will be truly consonant with the *Framework*, since these have many details and independent objectives or projects which have certain momentum of their own.

Particularly troubling is that the agency's performance measurements—those applied to itself for organizational goals and those applied to managers for merit pay and for employee evaluations—have not been changed and made consonant with the *Framework*. Basically, the orientation of daily work is unchanged. Thus, while the individual projects of the *Framework* may continue, they will find themselves colored and accommodated to the daily business and the existing system of incentives and disincentives reinforced by the current goals and performance expectations. In some cases this may mean that they lose their intended priority. In other cases, and most commonly, what it means is that they become servants to these other motivations. Present demand for tangible results will apply the tools and outcomes of the strategic plan to meet today's performance expectation. Thus, the objective of the strategic plan will be compromised, not out of any lack of commitment, but because immediate (and personally compelling) stakes and attention are fixed on these other objectives and the daily tasks at hand.

This is a present danger for the *Framework* and the planning process and, if not addressed, it will as surely cause it to dissolve as if it were abandoned by choice. SSA recognizes this danger and sees the need for redefined performance expectations that can more effectively measure and hold the agency accountable to its reformed self-image under the *Framework*. It faces, however, an uncertain outcome in an agency that has failed to do this in the past.

On the other hand, the *Framework* intelligently and correctly anticipated this essential tension of organizational commitments and the finite limitations of resources, and systematically recognized that it must seek to prioritize its objectives and must state them in terms of immediate as well as future needs.

It reduced its broad vision to five specific strategic priorities:

"Strategic Priority 1—*Improve the Disability Process*

This effort will be pursued on two tracks:

- To improve accuracy and timeliness by reforming the disability determination process and modernizing those SSA and State computer systems that are key to that process; and
- To assist people with disabilities to return to work by, among other things, testing and, if justified, implementing a "case-management" system (an approach designed to provide a variety of rehabilitation, job placement, and employment support services to beneficiaries).

Strategic Priority *2—Improve the Appeals Process*

At present, the appeals process can be cumbersome and very time-consuming. For example, it takes an average of 200 to 220 days to complete the hearings process. We believe that automated support of a streamlined appeals process is one mechanism by which we can bring

about the timeliness and quality we desire and that the public deserves.

Strategic Priority *3—Improve Access to SSA*

Although surveys show that, overall, the public is satisfied with the services we provide, we know we can do better. For example, some people still have difficulty reaching us by phone or obtaining appointments to see us. We must find ways of ensuring that all the services we provide are as effective, efficient and convenient as possible. Among other things, we expect to:

- Offer the public the option of doing more business with SSA over the telephone. Improve telephone service through the use of state-of-the-art technology.
- Establish the capability for the public to use their home or business computers to make contact with SSA.
- Collocate, where needed, personnel and/or offices of other service agencies with SSA offices in order to offer a wider variety of services that beneficiaries and claimants might need.
- Emphasize the development of both good interpersonal skills and technical competence in our employees.

Strategic Priority 4 - *Begin to Turn SSA into a Paperless Agency by Establishing Electronic Claims Folders*

SSA is an information-intensive agency, but, over the years, we have been limited by having to store, access, and move the information contained in paper documents. Nowhere is this more obvious than in our field offices and processing centers, where the paper claims folder, once our most important information source, has become the "curse" of the organization. At present, we require about 1.1 million square feet of storage space to house our folders, a figure that, without dramatic changes, would more than double by 2005. Over the years, we have automated our systems to the point where much of our processing can be done without the claims folder. But the folder still exists and is still needed. Our strategic thrust will be to eliminate the need for paper

Strategic Priority 5 - *Establish a Cooperative Processing Architecture* Until now, our primary automated systems resources have been centralized because our workload processing was more efficiently done in such a fashion. Now, because of advances in technology, it may be more efficient to process many of our workloads at the local level. Establishing a "cooperative architecture" means that we will determine the best kind of systems to process each kind of work that we do and will provide the capability to use such systems. This architecture will help us improve the availability and reliability of our automated systems and allow us to use complex tools such as expert systems. It should provide us the flexibility we need to help deliver quality service in the future."

For this case study and report to OTA, these strategic priorities are significant in several ways. First, they demonstrate that the *Framework*, unlike the previous strategic plan, has taken serious lessons from its assessment of the future, as well as the present needs of the public pressing upon them. In other words, the plan attempts to meaningfully incorporate its present needs and future forecasts, coordinating long-term developments and short-term responses. Recognizing that disability processing must be improved is immediately driven by the present circumstance, where the processing time for cases has jumped in the last two years from 94 days to 152 days and is expected to climb to 213 days; case backlogs have surged from 200,000 (1988) to 1,400,000 (1993).[1] But the priority is also driven by the aging of the Baby Boom generation which now moves into the time of its life when disabilities shall begin to rise.

The second significance is: how these strategic priorities in the Framework are directly oriented toward electronic service delivery and the application of advanced technology to change the client services. SSA has intentionally placed itself into leadership in the development of such service delivery options. Specifically, the technologies envisioned for the local office will facilitate a number of strategic objectives simultaneously. By installing distributed processing with local area networks and work stations in SSA local facilities, SSA overcomes a number of current systems shortcomings. At the same time it adds enhancements to work processes locally (performance-enhancing software, knowledge and decision tools and

[1] FY 1993 President's Budget (Justification of Estimates for Appropriations Committees)

databases, etc.) and ultimately sets up a platform for advanced applications, such as video-conferencing or touch-screen kiosks for waiting rooms, which might be used to create new electronic delivery services for clients. The way in which the incremental development of these capacities can be made consistent with both immediate and long-term objectives is the major basis for its economic and technical feasibility. If so managed, the systems implementation may accommodate the requirements for computer capacity and service improvements needed now and at the same time promote innovations which otherwise might not be justified, seeming too costly or glitzy.

Effects of Automation on Employees and Employee Relations

The primary subject of this case study has been the planning process and the relation of technology in electronic delivery strategies to the organization as a whole.

We have seen in the course of the 20 year period of this case study a profound transformation in SSA effectuated by a consort of technology and policy applied intentionally to change the way in which SSA works. The changes would not have been possible without the technology; it was at the heart of the staffing reductions—the Payback, as it was called in the *Master Plan*—and it was the driver for the way work and work processes were redesigned. How this technology affected clients and client services has been discussed: improvements are offset by many administrative expedients and some service declines; the priority of client service itself fell after the exigencies of technology, either because the technologies had become urgent for programs—"survival", as it was called in the SMP—or because "efficiency" was its own justification, even at the expense of individual clients.

What about SSA employees during this period? How might this case study illustrate how employees and employee relations are affected by such changes?

In general the human resource management issues for such automation have also been secondary in interest or attention. If there was interest or attention, it has been largely to the extent that they must be accommodated to the technology and the work changes that the technology brings. Most consultation with staff, either formally with the union or by other informal means, has been after decisions were made, after installation commenced and work processes had been redefined. Efforts to engage the labor union in more broad and responsible roles failed in the mid-1980's with one of the many transitions in leadership that have repeatedly jarred the agency.

Participative employee relations is set forth now as one of the commitments of the agency under the *Framework* and it is an integral part of the quality management program that SSA and many federal agencies are developing. However, it has been difficult for federal agencies to achieve the new practices and employee relations that it needs for such a goal.[1] At present, SSA has made little progress toward this commitment and the hostility of the labor union to the strategic plan and its objectives is strong, even though much of the plan speaks to issues that the union highly values.

Perhaps, the strongest illustration of the past history and present circumstance is to be found in the failure of SSA to effectively address two issues of wide-spread employee concern: ergonomics and morale.

Most VDT workstations in SSA field offices and many in other locations are ergonomically unsound. Many workers at those work stations are affected by repetitive stress injuries and other physical discomforts. This adversely affects their productivity and performance. A number of grievances and complaints have been filed by the union and the employees and they have resulted in a series of strongly-worded

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[1] A recent GAO study found that while most federal agencies are taking up these new quality management practices, it is on the shoals of employee participation that large numbers have foundered.

rulings by arbitrators against SSA. SSA itself, working with the union during a brief and ill-fated effort at cooperation, had once-upon-a-time agreed to a progressive policy on ergonomics. The policy faltered, however, in its implementation. Implementation of the policy on ergonomics was slowed by substantial budget reductions in FY 1988 and again in subsequent years. However, purchase and replacement of ergnomic furniture is continuing and current plans for FY 1994-1997 would accelerate the process.

In all surveys of SSA employee attitudes, the technologies and work changes that have transformed SSA, especially the more potent changes in the last few years, have been well received. The benefits to clients and to their own work activities are easily recognized and appreciated. At the same time, however, the surveys have revealed a deep-seated mistrust of SSA management, anxiety for the future, a sense of alienation, and an endemic "burnout" in those with the jobs of public contact— all of which conditions are seriously pathological for an agency whose core mission is direct client service. Understood as one that directly affects service delivery, the problem of morale is not a matter that may be dismissed, as it seems to have been in the past, as a side-effect of other agency problems.

The problem of morale is not now specifically addressed by SSA's strategic priorities, although it remains a likely topic for the Human Resource Plan yet to be completed.

If this problem does not obtain such a status, it will continue to surface in other, seemingly unrelated ways, such as discourtesies or hasty treatment of clients, misinformation to clients, marginally acceptable work, and lagging productivity. SSA management will be tempted to treat these symptoms rather than the disease. The problem of morale is the consequence of the transformation of SSA over the last 20 years and must be addressed accordingly. Staff reductions have heavily burdened employees. Work change has made jobs insecure. Stress in the work place has increased and affects employees adversely.

Lessons of this Case Study

Reserving to the conclusions any judgment about implications for policy, the case study of SSA suggests these lessons to those who would adopt large-scale electronic delivery services that may substantially alter the way in which a agency now works.

- Strategic planning for large-scale service transformations is essential, and must be integrated with agency operations, budgets and other plans.
- Transformative strategies run the risk of being technologically driven or driven by paybacks for expected efficiencies; these risks imperil the agency and the services being devised.
- The application of transformative service delivery should be conceived within the framework of the totality of service delivery, so that its value to the client and its relation to the total system of services drives its design, implementation and management; elsewise, it risks being concocted in isolation and may be contrary to other services and expectations.
- The effects of technology and the changed work processes upon workers and work places must be assessed in advance; the costs of the "human factors" and employee relations must be underwritten in the original plan and carried forth as a requirement of business. More often these are neglected or deferred and then become more costly to accommodate afterward.

Food Stamps: Case Study on Electronic Benefit Transfer Technology

Food stamps currently serve 26 million Americans in 11 million households at a cost of $25.6 billion annually. Benefits are delivered to them in the form of coupons or script which the recipient "cashes" at stores for food products. By its design this commodity-based income assistance is a throw-back to earlier (19th century) welfare systems that sought *not* to maintain income but to provide shelter, clothing and food for immediate want. However, the program has always also had the additional mission to direct its expenditures to agricultural products as a market-based economic strategy—to maintain demand on products and absorb surplus that may affect prices. In this same way the WIC program and other commodity give-aways have economic purposes as well as social or nutritional ones. As an income maintenance program Food Stamps and other commodity-based assistance may not be not cost-effective because they duplicate administrative costs for other overlapping assistance programs. However, they have these other public policy bases, which for this analysis are presumed.

This needs to be said since any decision to advance electronic benefit transfer to the program by the wide-spread proliferation of point-of-sale transactions is a costly investment. If the Food Stamp program were to be dissolved in a rationalization of income maintenance programs, the investment would be wasteful.

In the previous discussion, the on-going Food Stamp experimentation with electronic benefit transfer (EBT) was outlined. As things stand, USDA has issued regulations authorizing state administrators of Food Stamps to apply EBT to their recipient transaction in lieu of coupons, and setting forth requirements for the implementation and conduct of an EBT program, including stipulations to facilitate recipient and merchant participation, alternatives to EBT, training for recipients and so on. This case study does not specifically review any of the current experiments nor evaluate the EBT program in terms of its impact upon clients. To some extent, these issues have already been addressed by USDA in the development of their current regulations; they have certainly been the focus of a lengthy process of policy development and public inquiry.

On the other hand, there is not sufficient data by which to do a complete assessment, although there are some anecdote and data to suggest some things that should be considered and which we will reference as we proceed. Each demonstration project includes an evaluation and will assess the issues of cost and constituent concerns and satisfaction. The only completed evaluations are for the initial demonstration in Reading, Pennsylvania, and it is upon that demonstration that most of the findings and data used in this case study is based.

The Food and Nutrition Service is coordinating the various evaluations and will attempt to combine data and findings from the combined results as they become available. However, at this point there is no systematic evaluation planned—one that might pool recipients or retailers or state administrators across multiple projects, employing a single instrument for consistency and synchronicity of measurement. We recommend that one of the outcomes of the OTA study should be to call upon the USDA to consider such a cross-project study, employing scientific sampling, to better assess the impact of EBT upon clients (recipients and retailers) and to evaluate not only issues of actual EBT cost and performance, but also actual satisfaction.

The focus of this case-study is upon the implications and options for the nationwide implementation of an EBT network which the Food Stamp program is expressly beginning and which has applications to other assistance programs of the federal, state and local governments.

EBT—A Coming Reality

Since the first pilot in Reading, Pennsylvania began in 1984, the application of EBT has obtained increased momentum, perhaps

frustrated only by the capital investments that it now requires. USDA now reports EBT programs operating or initiated in both statewide and local jurisdictions:

- Albuquerque, New Mexico (1990)—also includes AFDC
- Camden, Essex, and Hudson Counties, New Jersey (approved by USDA)—also includes AFDC
- Casper, Wyoming (1991)—originally included only the WIC program, employing "smart cards" and off-line transaction processing
- Cedar Rapids, Iowa (approved by USDA)—also includes AFDC, employing installed base of commercial merchant network of POS/ATM devices
- Charleston, South Carolina (approved by USDA)—Food Stamps only
- Dayton, Ohio (1992)—Food Stamps only, employing "smart cards" and off-line transaction processing
- Maryland (1992)—also includes AFDC and other state and local welfare payments
- Oklahoma County, Oklahoma (approved by USDA)—also includes AFDC and other child support benefits
- Ramsey County, Minnesota (1991)—also includes AFDC and other state and local welfare payments
- Reading, Pennsylvania (1984)—site of the original demonstration project

Planning is also underway for demonstrations or implementation in17 other states: Florida, Kansas, Michigan, Texas, Missouri, California, Mississippi, Georgia, Colorado, Virginia, Illinois and Tennessee and two multi-state efforts—North Dakota and South Dakota, and a consortium of Vermont, Maine, and New Hampshire.

Because the assistance programs employing these EBT systems are state and locally administered, the planning and development of EBT systems is at the state and local level. As a consequence, a wide range of designs and operational variance occurs. This is mitigated somewhat by USDA and other federal oversight and mandates, and the structure of the POS and ATM business with its well-defined networks and limited number of service providers. Some terms and conditions are fixed, as it were, such as the costs of electronic transactions through the networks.

At the same time, the economies of nationwide EBT deployment are lost with piecemeal and disparate implementation as it is now proceeding, especially where such a system would serve other federal or local income assistance programs such as AFDC, SSI, General Assistance, WIC and others.

No ready structure exists to undertake the coordination of these programs on this scale. Program coordination of this kind is typically ad hoc. If permanent arrangements are required, agency activities are generally tandem, rather than merged, though sometimes contractual relationships for reimbursable services are executed where one agency undertakes the lead for the joint activity. However, the history of program cooperation and data exchange between programs at the federal level or across federal and state/local jurisdictions is highlighted with the difficulties of combining processes and administrations which have fundamentally different requirements and diverging responsibilities (different accountability systems, different clientele, different organizational cultures). Moreover, unless the benefits of the cooperation are clear and compelling, the agency may be reluctant to commit resources that are needed. [See sidebar on SSA and Food Stamps for an example of such interagency cooperation].

A government-wide interagency taskforce, led by the Treasury Department—the Interagency EBT Steering Committee—has been promoting the EBT application since 1989. It helps to facilitate relations with technical and banking industries that are involved, but it is not positioned, nor commissioned, to undertake administrative or policy leadership as it is now constituted. Nor is the leadership of the Treasury Department or this Committee appropriate for an effort to unify the EBT initiatives of

federal programs. While the Committee has undertaken to investigate problems of and solutions to many EBT issues (such as common standards for EBT systems), it lacks authority to enforce solutions it may devise, nor can it undertake the responsibility for a government-wide strategy which might effectively combine agency efforts and their separate budget authorities for greater economy, without Executive leadership and Congressional support. [1]

EBT programs, as they are now developing, will eventually integrate both point-of-sale (POS) and automatic teller machines (ATM) in a ubiquitous internet of income-assistance transactions involving multiple federal, state and local programs. As it now is developing, EBT systems for income assistance are not a national implementation that is planned strategically with express objectives. Rather, the network is emerging, more or less rapidly, as the consequence of federally promoted, but otherwise independent, initiatives.

This piecemeal implementation, the lack of systematic coordination and the want of government-wide strategic planning for a federal EBT program has several consequences. First, activities of one agency are isolated from those of another. Redundant expenditures and duplicative efforts may occur. Moreover, decision-making is isolated. Costs, for example, that may be shared are seen instead to be the burden of individual agencies. A recent Congressional bar against national implementation of a Food Stamp EBT unless it is "cost neutral" may be said to be the unintended consequence of such narrowly focused decision-making.[2]

Case Example : Failure of Program Coordination — SSA and Food Stamps

Since 1977 SSA has been required by statute to take Food Stamp applications from potentially eligible SSI recipients. The law went unimplemented for three years. When finally initiated in 1980, it compromised the broad purpose of Congress for one-stop service because of what were deemed insurmountable administrative difficulties.

Throughout its administration of this "one-stop" service, SSA has been criticized for its failure to take the applications that the law requires and indeed failing to even refer the potentially eligible for Food Stamps. It has been the subject of numerous Congressional inquiries.

In September 1992 the GAO reported:

"SSA has not adequately carried out its responsibilities under the Food Stamp Act. SSA has taken relatively few food stamp applications for the SSI clients that the Congress wanted to help. A principle reason appears to be a lack of strong commitment by SSA management and staff to carry out the tasks assigned under the Food Stamp Act. Taking food stamp applications is viewed as the responsibility of the states and the Department of Agriculture.... Since inception of the joint application process in 1980, SSA field staff have taken a very small proportion of food stamp applications in relation to the number of SSA clients served. For fiscal year 1991, SSA reported taking only about 37,000 food stamp applications, representing about 1 percent of SSA applicant and recipient work loads. Nevertheless, hundreds of thousands of SSI clients are eligible for, but do not apply for food stamps at SSA. SSA's fiscal year 1990 computer data show that about half of the 2.3 million SSI clients applying for benefits or having their SSI benefits redetermined were not receiving or had not previously applied for food stamps. Of these SSA applicants and recipients, we estimate that about 500,000 lived in pure SSI households and could, but did not, apply for food stamps at SSA. In addition, more than half of these... are categorically eligible for food stamps."

Second, the EBT systems may be incompatible with each other. Welfare activists are already concerned about recipients who are converted to EBT systems and find they cannot shop in areas outside of the EBT service area. In places like New York City, Philadelphia, Washington DC and

[1] The Taskforce is endeavoring to launch a Prototype platform for combined EFT and EBT transactions. It is also coordinating with the American Banking Association (X9a Committee) to establish a common set of systems and operations for such multifaceted network. Such standards should in turn be promulgated by ANSI for data processing protocols. These efforts have lagged behind their timetables, however, and the Prototype platform is now said to be delayed until 1995.

[2] 1990 Mickey Leland Memorial Domestic Hunger Relief Act (P.L. 101-624)

others where recipients are used to shopping in other cities or states, they must change their merchants—a concern to the merchants as well as the recipients. State administrators and Food Stamp officials are sensitive to these concerns and are attempting to remedy the problems as they occur. For example, in the Maryland demonstration project POS terminals are being placed in border areas of Delaware and the District of Columbia. But as these states come online, if they do, incompatibilities can result in other difficulties as systems or data need to be joined. In general this problem of incompatible and non-interoperable systems presents an unquantified problem—the additional costs and service problems associated with it are not clear and have not been estimated.

Third, the investment of multiple independent EBT systems is more costly than a unitary national program. A recent estimate found the current state/local initiatives will cost at least 5% more than a full national unitary implementation. The cost estimate for state administered implementation—which is the current trend—projects a final total investment at $246-291 million, compared to $233-277 million for a national initiative.[1] These unnecessary costs proliferate with the extension of EBT across additional programs and additional administrations.

Finally, the burden of the current EBT implementation falls largely upon state and local government initiative. USDA evaluation of EBT feasibility found:

> State Agency administrators most frequently cited resources constraints as the biggest obstacle to implementation of EBT systems, including both State and Federal funding levels and lack of state personnel with appropriate technical and managerial skills. With respect to funding, administrators were concerned with high start-up costs and questions over the likely cost-effectiveness of EBT systems once they are operating. The latter concern was particularly important to States whose current issuance costs are relatively low. [2]

Absent federal support for these costs and technical requirements, many state and local entities will be unable or unwilling to participate in an EBT system, resulting in a patchy internet as well as an incompatible one, and ultimately causing inequities among client services for identical federal programs.

Electronic delivery of benefits through electronic transfer can be more or less costly than traditional coupons (script) or checks (warrants). Electronic Fund Transfer (EFT) to personal bank accounts has proven to be a much less costly means of issuing cash payments than checks (warrants). In one case, where EFT was used in lieu of AFDC payments for Fresno County, direct costs for EFT were 12¢ for each payment *versus* 49¢ for the normal warrant.[3] SSA which promotes EFT for Social Security and SSI payments notes that it substantially reduced the "lost check" problems that used to plague the administration monthly, and has found that EFT resulted in significant labor savings and additional savings associated with re-issuance of such checks. But EBT for coupons or scripts, which must be processed as sales transactions, do not have the same savings. One reason is that the electronic transaction happens several times in a month, not just once. Additionally, there are actually a multiplicity of transactions involved—between banks and merchants as well as between these and the federal agency—and the data processing requirements are greater, providing accounting for over 230,000 merchants and 9 to 11 million cases monthly. For all of these reasons the direct administrative costs for EBT are greater than coupons. Overall the initial investment for a national EBT system is estimated to cost between $233 and $278 million.[4] The recurring administrative costs

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[1] *The Feasibility of a Nationwide Electronic Benefit Transfer System for the Food Stamp Program*, Kirlin et al, April 1990, pg. 206, Exhibit 8-18.

[2] IBED, pg. vi of Executive Summary.

[3] *From Paper to Plastic: The Electronic Benefit Transfer Revolution*, Department of Treasury, 1990, pg. 64.

[4] OPCIT, pg. 204-5

would rise as much as 89%.[1] A nation-wide EBT system cannot be "cost neutral" to USDA administration and therefore the current Congressional requirement is a barrier to this otherwise more cost-effective option.

Adding other programs to the EBT networks does bring some economies of scale. The USDA study on the feasibility of a nationwide implementation of EBT for Food Stamps made models of EBT network with and without AFDC program participation as well. The combination may permit USDA to charge off as much as 29%of the investment costs to the other program, and it also allows some of the recurring costs to be shared as well.[2] But still the costs are not cost-neutral, and may not be so for the federal government as a whole, even assuming that *all* programs with a potential EBT application were joined into a national program in order to share the investment and maintenance costs.[3]

While the electronic transfer of benefits is less labor-intensive and seems intuitively less costly, there are two costs not recognized by that intuition. First, the transaction costs of these—especially point-of-sale transactions—accumulates to high numbers. Food Stamp recipients, expected to have on average 8 transactions per month, will accumulate transactions costs of $1.99 per case per month, which is more than some States now spend on their entire cost of coupon issuance. Second, the networks of ATM and POS terminals are relatively new and underdeveloped. POS terminals do not exist in most stores. ATM's (for cash) are not well-distributed in many rural and urban areas where program recipients may live. The networks for such terminals developed locally first. Regional and nation-wide internets are relatively new and are not as ubiquitous as they seem, requiring multiple vendors or consortiums for any national initiative and posing technical and other problems, but certainly also burdening costs. Thus the development of a truly national network (or internet) of POS and ATM points of service would be to create something that does not exist. As a financial service, it is kin to the "information highway" of the NREN.

The Economic Costs and Benefits of EBT

The true economic value of EBT should not be measured solely by Food Stamp administrative costs alone. The total economic consequence of a national EBT network should be evaluated in terms of the effects that it has on all that may be effected by it. First, in economic terms, these are the comparative *transaction* costs of the current system *versus* that of EBT. Second ,it is the value of the EBT infrastructure—the increase of POS devices from 50-70,000 nationally to the 356-597,00 envisioned by a national implementation for EBT—as that network might contribute to commerce.

Transaction costs, as applied in economics, normally refer to those that are within the operation of an activity.[4] As applied to public administration, the transaction costs of the public itself are part of the total cost of government, often implicitly accounted for in the design of public programs. In the case of Food Stamps, for example, the requirement that recipients pick up coupons monthly from a disbursement center is a cost to the recipient but it is also a design of the program. That banks must be redeem

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[1] Based on the full deployment of 527,200 POS terminals. Alternative deployment strategies and other changes to the costs of the network can substantially reduce the cost of EBT. See discussion below.

[2] IBID pg. 188.

[3] Costs depend upon the EFT/EBT design and delivery strategy to a high degree. The costs of simple direct deposit programs to client-established bank accounts is very small and clearly less than check or scrip pay-out. But where EFT is to be made to clients who do not have bank accounts or is to be processed via POS terminals, the costs mount up and often do not improve upon direct administrative costs of the scrip issuance. There may be other reasons or other program savings to EFT/EBT, however. Such a program can save the recipient the loss he/she incurs from check cashing fees, sometimes high and exorbitant, and permit them access to the other benefits of banking services.

[4] Transaction costs and values in economic activities is a relatively new but well-accepted analysis. The theory and principles grows out of interest in understanding the value of organized economic activity, such as corporations, and seeking ways to measure the cost and value of that organization. See especially: Williamson, Oliver E., *The Economic Institutions of Capitalism*, New York: Free Press, 1985.

Table 9 Comparing the Monthly Case Cost of Food Stamps, Coupons *versus* EBT —Administration, Recipients, Banks and Merchants

	Current Coupons (average)	EBT	Net Costs (+) or Net Savings (-)
Admin. Costs	$3.00	**$5.67**	+$2.27
Recipient Costs	$2.21	**$0.27**	-$1.94
Bank Costs	$1.36	**$0.14**	-$1.22
Retailer Costs	$4.88	**$3.53**	-$1.35
Total	*$11.45*	***$9.61***	*-$1.84*

Based on full-scale national EBT implementation[1]

coupons, that merchants must tally and report Food Stamp sales in certain ways—these also are costs of the program and the intentional design of the program. If EBT changes these requirements and effects these costs, then the program increases or decreases economic costs of the public program and the effect should be counted in measuring the value (costs or savings) of the change.

While EBT results in a net *increase* in direct administrative costs, EBT substantially *reduces* the total economic cost of the Food Stamp program—a total reduction of economic costs of up to 16%. In fact, moving away from paper coupons to EBT provides substantial savings to *all except* the federal and state administrators.

Basically, EBT shifts costs away from recipients, merchants and banks, and places it instead upon the federal and state administrators who must pay for electronic processing, where formerly these others paid costs under a system of coupon exchange and processing. Specifically, the EBT delivery of Food Stamps, as presently envisioned, places a new burden of fees upon the government administrators (for bank and clearinghouse exchanges and related data processing).

To shift these costs brings large consequential savings to the economy. In the case of the banks, it generates $104 million in annual savings ($159 million in 1993 case rates), which moneys presumably go elsewhere in the economy.[2] Total savings to merchants from EBT *versus* coupon processing is $114 or the equivalent of 11,000 jobs, based on the average payroll cost in the retail grocery industry (or $175 million and 16,700 jobs at 1993 case rates).[3] Total economic savings in terms of the 1990 figures, combining savings to banks and merchants, are $218 million.

The transaction cost savings to recipients is also large and important in this calculation. Employing the 1990 case average from the base analysis, the economic savings to recipients would total $164 million, representing costs they would forego by not having to go to disbursement centers monthly for Food Stamps and hence also representing money available for other consumption.

Perhaps more difficult to consider as a simple beneficial savings is the effect of EBT on diverted or lost coupons, not because the value cannot be estimated, but because that

[1] Data for this analysis is based upon two studies of EBT and Food Stamps, commissioned by the USDA. *The Impact of an Electronic Benefit Transfer System in the Food Stamp Program*, Abt Associates Inc., May 1987, which evaluated the first EBT pilot in Reading, Pennsylvania; and *The Feasibility of a Nationwide Electronic Benefit Transfer System for the Food Stamp Program*, Abt Associates Inc. (Kirlin, King, Davis, Jones and Silverstein), April 1990. Additional data, not specifically included in these reports, but also developed by the contractor Abt Associates, was also published in the USDA publication *Electronic Benefit Transfer in the Food Stamp Program: the First Decade*, March 1992. The data has been adjusted in some instances to remove the effects of AFDC program values which the analysis may have originally contained, so that this analysis reflects only the Food Stamp program.

[2] Bank costs under the Food Stamp program are estimated to be $6.66 for each $1,000 of coupons redeemed. Costs drop 90 % to $.67 per $1,000 of purchases under EBT. The figures for total bank costs are based on 1990 Food Stamp benefits paid of $17.3 and the more recent trend of $26.5 billion annually. It should be noted that some coupons issued are never redeemed, so these estimates may be somewhat inflated. Unredeemed coupons, however, are less than 1%.

[3] Retailer costs under the Food Stamp program are estimated to be $23.88 for each $1,000 of coupons redeemed. Costs drop 28 % to $17.28 per $1,000 of purchases under EBT.

Table 10 Comparison of Costs to Merchants, Coupons *versus* EBT — based on estimated 1990 Food Stamp expenditures[2]

	Cost per case	Total Monthly Cost	Annual Cost
Coupon Processing	$4.88	$34,427,000	$413,124,000
If EBT	$3.53	$24,912,000	$298,944,000

Table 11 Comparison of Costs to Banks, Coupons *versus* EBT— based on estimated 1990 Food Stamp expenditures

	Cost per case	Total Monthly Cost	Annual Cost
Coupon Processing	$1.36	$9,601,500	$115,218,000
If EBT	$0.14	$965,917	$11,591,000

value does not mean that program expenditures or transaction costs are reduced (in fact they may go up slightly).[1] However, the Reading experience and others have demonstrated that Food Stamps delivered by EBT greatly reduces the risk that their value is diverted, misdirected or unspent.

The USDA has estimated that the amount of coupons diverted or lost in terms of monthly Food Stamp value is the equivalent of $3.20 per case per month. Most of this is in the form of cash change on Food Stamp dollars that recipients receive by their purchases. EBT practically eliminates diversion and lost

[1] Estimates on benefits diverted illegally—such as sale to third-parties—are subject to expert opinion and are not well-established. However, the majority of the diversion of Food Stamp dollars result from the purchase of food for less the redeemable value of the coupon (under $1) and cash is given in change. Those "diversions" are more reliably estimated.

[2] Estimates are based on 1990 data to provide consistency between the tables.

Table 12 Comparison of Program Losses (value of diversions and lost coupons), Coupons *versus* EBT

	Current Coupons	EBT	Net Costs (+) or Net Savings (-)
Program Loses*	$3.20	$0.66	-$2.54

value. Projected to a national total, that value restored to the program adds up to $215 million in 1990 benefits (under our baseline analysis) and represents about $271 million annually under today's case rate.

A very small portion of this, representing the value of lost coupons, results in some increase in actual government expenditures (though not obligation); its an ironic price of greater program efficiency that these dollars not lost will thus be expended.

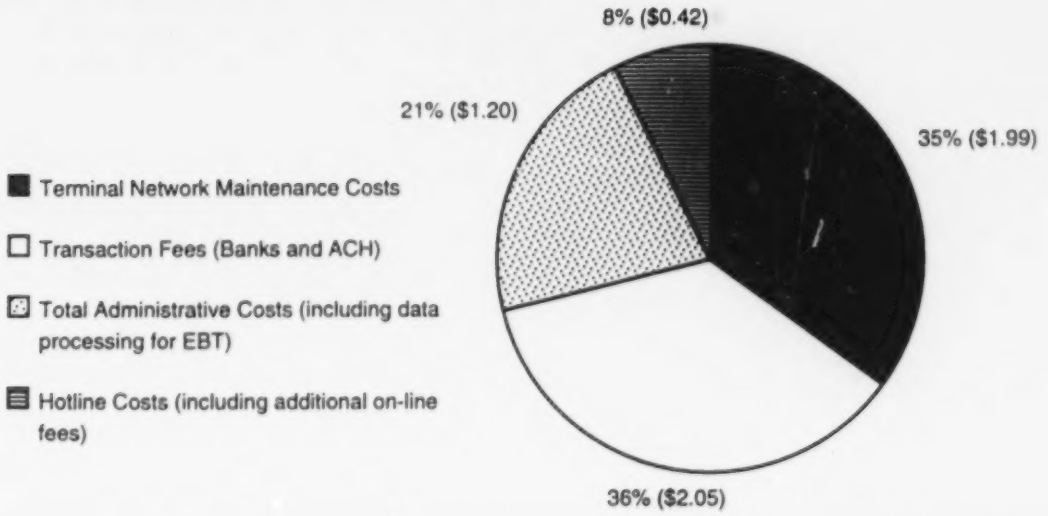
But 96% of this value is made up of the value of Food Stamps now diverted by cashing them out or by illegal trafficking. Accordingly, EBT may assure hundreds of millions of dollars annually in additional food purchases for recipients and merchants. To the degree that diverted or lost Food Stamps were not formerly spent for food, EBT therefore positively reinforces the nutritional value and economic benefits of the program for farm and food industries.

Options to Moderate EBT Administrative Costs

On-going costs of the EBT program consist of the current administrative responsibilities and data processing requirements which may go up somewhat for the new process but are also offset by savings due to the elimination of the coupon system.

The largest part of the on-going costs for an EBT system for Food Stamps are (1) the lease and maintenance of the POS terminal network, estimated at about $168.12 million per year, and (2) the cost of electronic transactions via an on-line real-time system

Chart 10: On-Going Costs Of EBT Network, Percentage And Monthly Per-Case Costs [1]



of credit and debit, with some batching through Automated Clearing Houses, estimated at $171.6 million per year. Together these comprise 71% of the on-going costs.

The central strategies to mitigate costs of EBT will focus upon these two variables. The USDA's own feasibility studies and policy considerations have taken this into account. They have recognized that several interventions can cut costs:

- reduced transactions per client
- reduced prices for transaction fees
- reduced costs for network components or maintenance
- reduced numbers of POS terminals

Some of these can be translated into specific case costs reductions:

- as much as 22¢ per case per month for each transaction saved
- as much as 19¢ per case per month if fee structures for EBT transactions are at the lowest feasible market rates
- as much as 40¢ per case per month if the retailer is not reimbursed for telecommunications charges on POS transactions
- as much as 32¢ per case per month if the terminal hardware and maintenance costs are at the lowest feasible market rates
- as much as 70¢ per case per month if the POS terminal deployment is reduced to the lowest feasible level

Each of these savings carry policy and program considerations.

(1) The numbers of transactions that a client may make at POS may be greater than the 8 expected each month, rather then less. To control these costs by expressly limiting the number of times the client can shop and use the POS would be to change current practices and require regulation or law that would be highly controversial.

(2) To eliminate planned reimbursements to retailers for use of POS terminals would

[1] Based on Kirlin, King et al: 1990, pg. 242, 275. Terminals @ 527,200. (where implementation is state-administered and total number of terminals installed are 527,200) (based on 1990 costs)

require changes to current law that expressly requires such payments and again would be highly controversial.

(3) To achieve the best market rates for transaction fees, hardware and maintenance cannot be mandated in a State administered structure and may be dubious in any event. A national initiative should be more likely to leverage such rates, if they can be achieved.

The only cost reduction option, not requiring legislation or national intervention, is the reduction of terminal deployment. In fact, the final regulations of the USDA for State-administered EBT implementation provides for reduced numbers of POS terminals in order to reduce costs. The high estimate of terminal lease and maintenance costs—shown above and in all previous cost estimates—is based on installation of 527,200 terminals; it assumes virtually full coverage in all check-out lanes at participating retailers. A lower estimate is based on a deployment of 306,000 terminals, providing a minimally-acceptable coverage of the check-out lanes in the stores. This reduced deployment strategy is authorized by the Food Stamp regulations to the state administrators. States, however, may opt for greater numbers of terminals (as was the choice of Maryland, for example).

Public/Private Partnerships —EBT As A National Investment

Public policy could also shift the burden of costs *back* to recipients, banks and merchants by assessments of some kind. For example, food stamp recipients might pay for their use of the EBT network by a charge against their benefit account on each occasion. Similarly, banks or merchants might be mandated by statute to absorb the processing fee costs. In one sense, this would be no different than the current program which already imposes some costs of the public program upon them. However, the costs of a national EBT network may also be mitigated in other ways.

The development of a POS network has commercial value to merchants, banks and consumers generally. Assuming that the cost savings to POS for check-and-cash sales is similar to that achieved by Food Stamps, a modest commercial use of POS terminals at just 1% of sales could net aggregate savings of $24 million.[1]

In the same way that such investments in the past have inspired cooperative government and private interests and capital, a national EBT network could be a partnership with commercial interests and the costs and advantages of it may be shared between them.

At the time of the USDA feasibility studies for a nation-wide implementation, the existing network of ATM's was supposed to be the basis for any cash benefit transfer, but the installed-base of POS units in grocery stores was as few as 70,000. USDA estimated that they would need to install an additional 527,200 units.

The costs of this installation represent up to 60% of the total start-up costs of the nation-wide EBT network. It is the underlying capital investment for the network, and its primary program value is predominantly to Food Stamps and WIC and other commodity-based assistance programs and possibly for purchasing prescriptions drugs under Medicaid. AFDC and other cash benefit recipients may use the POS for shopping, but it is at best a secondary and unessential value for these programs, since the great majority will use ATM for cash transactions.

On the other hand, these POS units will be immediately available for use by other consumers who may use bank cards or credit cards to transact sales. In many of the current projects the application of these POS units for commercial purposes is intended and planned by the state and local administrators.

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[1] Based on 1987 census data showing an average of $1.5 million in sales/receipts for a "food store"—refer to US Bureau of Census, 1987 Census of Retail, RC87-A-52.

Table 13 Costs of Implementation—Hardware, Installation, etc.[1]

Terminal Deployment	$158,210,300
Retailer Recruitment & Training	$12,232,400
Other costs	$4,891,900
State Agency costs	$191,149,800
Other startup costs	$85,000,000

Given this value and benefit to commerce, it is reasonable to share the costs of the infrastructure. By one model the investment of the network—outlay for hardware and installation and so on—could be financed by a consortium of federal and private funds, where the federal government awards the network to one or more vendors who would assume a financial risk and undertake the operational requirements for the network in return for some capital or low-interest financing. On the other hand, supposing that the capital investment of the network is entirely undertaken by the federal government, the installed network could also subsequently be sold to recoup that investment. To minimize federal responsibilities, however, the model of joint partnerships from the onset would be preferred.

Such a strategy has two major advantages. First, it shares or shifts the burden of implementation reasonably to public and private interests that benefit from the network, as already described. Second, it also can substantially reduce the on-going costs of the network and bring the administrative costs closer to the current levels. Though still not cost-neutral, the revised costs would be within a more reasonable proximity to their current level.

Reducing the burden of these costs by sharing the maintenance with commercial interests can greatly reduce the net administrative expense of an EBT system for Food Stamps. If the terminals are leased to grocers at the current fair-market basis by commercial vendors of POS under agreement with the government, the cost of maintenance may be assumed in the lease. The vendor recoups operations costs by fees and subscriptions from the merchants, who in return benefit from the value of commercial as well as Food Stamp sales.

The federal government should be expected to reimburse any fees or costs associated with Food Stamp transactions. Using 3¢ reimbursement per transaction as the customary rate—just to cover the maintenance cost of the POS unit—the average terminal will cost the Food Stamp Program $6.66 per month. Extending this to the entire network, the federal share of maintenance burden for the POS network is reduced to just about 50¢ per case per month *versus* the original $1.99.[2]

Looking at the issue in another way, the complete federal assumption of maintenance costs for the POS network (under the original USDA estimates of costs) amounts to a federal subsidy of commercial uses, equal to about $10.6 million annually. At the very least, if the federal government were to maintain the POS network, it should recoup its costs by assessing fees for the non-Food Stamp transactions. Either way savings to the administration of the program should emerge.

A second mechanism for public/private partnerships is by trading the advantages of the "float" on electronic fund transfer in negotiating these fees as well.

The Food Stamp model for EBT basically preserves the current sequence in financial transactions as is now the case for coupons. The value of the script (or the transaction) is

[1] Kirlin et al, (1990) pg. 205.

[2] The 3 cent rate is based on the findings of the Kirlin et al when they estimated the charge back to be assessed to the AFDC program for their share of network maintenance; it is based in turn on commercial practices.

passed along to the government for a monthly settling of accounts for merchants, drawing down a federal outlay in batches. By contrast, the EFT of cash benefits requires that funds be deposited *en toto* to the account of a bank for use by the recipient. When the Social Security Administration tested a smart card for SSI recipients, one of the attractions to the participating bank was that it would receive an infusion of capital which though drawn down by recipients, afforded some "float" that enhanced the value of its financial assets and presumably was available for commerce (loans).

There is no compelling reason that the Food Stamp program should continue the current sequence of financial transactions. The current process is embedded in the practices of the coupon, but an EBT system liberates the programs from these requirements. An alternative mechanism is to let some value of the Food Stamp obligation be transferred to banks who may hold the funds and transact the merchant payments daily. Such a transfer places a valuable financial commodity (money) into the market for other uses as well. It provides value to government objectives to stimulate market activity. It also represents substantial financial value to the banks.

Food Stamp benefits are not expended by the Federal government until redeemed. At present the equivalent of one month's worth of Food Stamp benefits or about $1.5 billion is maintained and replenished as needed in a Federal Reserve "redemption account" for the pay out to retailers and related debts. Assuming that these same funds are deposited and replenished and maintained at that level among commercial banks or vendors to the EBT, the value of this float would be $45 million per year (assuming a 3% return). Where the total cost of transactions is about $171.6 million per year, the profitable use of this "float" by the banks could be applied against it as an offsetting income. In other words, part or all of this $45 million profit to the banks could be considered payment in lieu of transaction fees. This permits the government to reduce its expenses by leveraging the advantage of its capital.

Table 14 Revised Administrative Costs—Where the EBT Network Shares Costs with its Commercial Participants and Leverages the Value of the Float

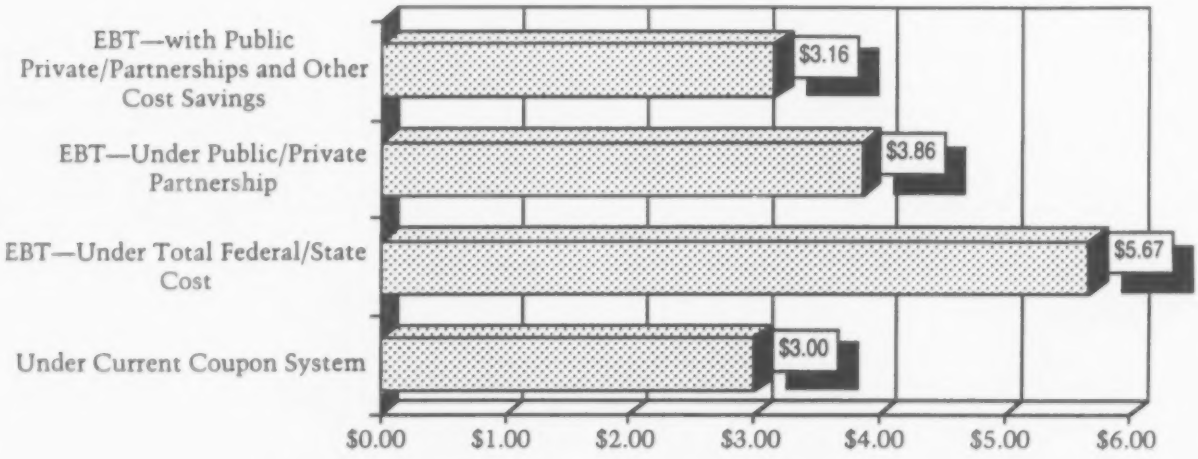
	Revised Administrative Costs (per case per month)
Revised POS Terminal Network Maintenance Costs	$0.50
Revised EBT Transaction costs	$1.78
Other Administrative Costs (including online connections to EBT database)	$1.58
Total	**$3.86**
If also the POS deployment is reduced, as planned by the USDA regulations, then the final case cost is:	**$3.16**

The EBT transaction costs can accordingly be revised if the transactions are negotiated with value of the float. Assuming that just *half* of the value is applied as a discount against the cost of transactions, the cost of transactions drops to $1.78 per case per month. [1]

This could be reduced further, by increasing the amount of the "redemption account". But doing so is arguably not cost-effective, since such funds on deposit in commercial banks represent cash shortfalls requiring funds to be borrowed and thereby incurring additional interest costs to the Federal government. The use of the "redemption

[1] Depositing the "redemption account" in commercial banks may also violate the Cash Management Improvement Act and may require amendment to the statute.

Chart 11 Comparison of Administrative Costs for Food Stamp Program—Coupons *versus* EBT Network under Federal/State Maintenance *versus* EBT Network with Public/Private Maintenance



account" as it is now constituted, however, should not have this adverse effect since the funds have been effectively released to the Federal Reserve, acting in effect as the clearinghouse for the redemption.

Overall the proposed mechanisms of public/private partnerships cut administrative costs to just $3.86 per case per month, down from the original estimates for an EBT program of $5.67 per case per month. Although still an increase over current costs, the EBT network is now more reasonably approximate to those costs. Combined with savings from other strategies to reduce EBT costs—especially the planned reduction in the deployment of POS terminals—the public/private partnerships of the kind envisioned here can bring final administrative costs to levels *equal to or below* the current average coupon cost.

Thoughts on Design Alternatives

The EBT/EFT model in this case study supposes an online internet of POS and ATM terminals and employs a plastic magnetic-swipe card for recipient-based transactions. There are other technologies and strategies that may be employed in an EBT/EFT model.

For EBT there are at least two others that may be feasible. First, the "smartcard" network with off-line transaction processing: this model is being tested in the Dayton demonstration project. It has advantages over on-line systems in the reduced costs of transactions and its portability and usability in small stores or open markets. Second, there is a "dumbcard" version of off-line or on-line processing that may also be feasible, employing paper cards with magnetic stripes, like the fare cards employed in many subway systems.

The USDA has made a *de facto* commitment to online systems and plastic cards for practical reasons. The existing commercial networks support that model. The installed base for which is significant enough to warrant it's advantage over a wholly and uniquely developed system of off-line or specialty POS terminals, or the technical problems of an intermixed internet of off-line and online systems. Certainly a public/private partnership is more difficult to achieve for a model that is inconsistent with commercial practices.[1]

EFT may employ ATMs for cashing out benefits, as proposed in this case study, but it may also employ direct deposits to bank accounts or other fiduciary agents from which clients may obtain cash or write checks. Such "direct deposit" alternatives were not considered by this case study, nor by the Food Stamp studies which we evaluated, but a fuller consideration of EFT should investigate how EFT may engage banks, financial institutions and other fiduciary agents to serve as depositories and services on behalf of recipients of cash benefits. In the same way that the "float" of Food Stamp dollars may be leveraged to obtain private sector cooperation, the large monthly outlays for AFDC, SSI, VA benefits, and others could conceivably leverage banking services for their recipients.

Policy Considerations for Congress

Analysis finds that an EBT network for Food Stamps can have numerous benefits to the Food Stamp program, its recipients and administration, but particularly to the wider economic context of this multi-billion dollar program:

- Overall economic costs of the Food Stamp program are reduced 16% by EBT
- If further administrative savings are realized through the public/private partnerships, as proposed, the total reduction in economic costs is 38%
- Cost savings to banks and merchants mean up to $334 million annually (at 1993 case rates) redirected in the economy at large
- Cost savings to recipients amounts to as much as $256 million annually (at 1993 case rates)
- Establishing a POS network for commercial use will stimulate commerce or result in economies to the marketplace in other ways
- Leveraging the "float" of Food Stamp obligations can reduce administrative costs but also can make as much as $1.5 billion available to commercial loans (under 1993 case rates)
- Thus, the total economic boost from an EBT system, not including the benefits of the investment itself and its commercial applications, adds up to more than $2 billion annually.

The analysis reaffirms the consensus that an EBT program would be most cost-effective if it incorporates other income maintenance programs, particularly AFDC, WIC, SSI, and needs-based Veteran's benefits. The POS network may also permit the "purchases" of prescription drugs by Medicaid recipients.

Accordingly we recommend that the Congress should formalize policy to promote and facilitate a nationwide EBT network, employing an expanded POS network and the installed POS and ATM network base. It is both economically and technologically feasible. It has immediate and long-term benefit to the specific programs and recipients that it would serve, to government operations and to commerce. Absent specific Congressional action on a nation-wide EBT network for income maintenance program, it seems certain that one will emerge by piecemeal implementation. Such an implementation wipes out many of the benefits described and may result in serious inequities and unnecessary costs.

The analysis for establishing a nation-wide EBT network suggests a number of

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[1] No formal complete feasibility study has been made of off-line processing or the use of "dumbcards". But the existing studies have drawn preliminary conclusions that are unfavorable to these models. See pg. 257-266 of *The Feasibility of a Nationwide Electronic Benefit Transfer System for the Food Stamp Program*.

important policy considerations for Congress.

First, any nation-wide network should be available to all federal income maintenance programs. Moreover, the broadest feasible mandate for its use in lieu of current scrip and warrant issuance assures the greatest economy of scale. At a minimum, AFDC and WIC programs should be included along with Food Stamps. SSI and Veterans benefits should also be considered, although the nature of their clientele (many of whom are disabled and require representative payees) distinguish these programs.

Second, the Congress should commit authority to a government-wide commission to plan, implement and manage the government-wide interests of an EBT network.[1] Certain issues are clearly transcendent in the design and management of the network; others are program specific. Agency cooperation with the Commission must be assured, even while their specific needs are addressed. To ensure that the Commission is responsive to the individual agencies whose programs would be served by it, the Commission should be comprised of representatives of each agency. Obligations and costs of the EBT network should be budgeted to the Commission and participating programs would be assessed network costs on the basis of usage. The investment and implementation costs, however, should not be charged to the individual programs.[2]

Third, the Commission must undertake a review of current statute to identify changes that may be needed in individual program statutes, requiring Congressional attention or otherwise, and to identify statutes which pertain to government-wide matters that may be effected. For example, Regulation E which implements the Electronic Funds Transfer (EFT) Act (15 U.S.C. 1693 *et seq.*) creates a legal framework for the rights and responsibilities of EFT providers and clients. How this should apply in the event of the EBT network, especially with a private and public management, is unclear.[3]

Fourth, the Commission should be empowered to engage in public/private partnerships, service agreements, contracts, and special financial arrangements (including federally guaranteed loans or low interest loans to underwrite the network), and granted other necessary authorities to maximize federal advantages in the EBT network and minimize the net costs of investment, maintenance, and recurring fees.

Fifth, the existing Congressional restraint on the Food Stamp program, as set forth in P.L. 101-624, should be lifted if the government is to advance a nation-wide network.

Finally, Congress should recognize the impact of EBT on recipients, state and local administrators, and others affected by the programs. Some issues can be addressed by principles legislatively. For example, the Congress may believe that equity of access needs to be enunciated to ensure that disabled recipients can use the EBT system or to ensure convenience for those who may now not have ATM or POS units within their community; and Congress may wish to require that alternative payment procedures are available in all cases. However, the Commission should be empowered to promulgate regulation to address those that should necessarily and essentially be addressed by government-wide regulation (such as design) and defer to program administrators others, though possibly instructing them by guidelines. In the context of the example, the Commission may undertake to assure standards for handicap accessibility, while the individual agencies devise alternative payment systems and procedures under general guidelines.

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[1] A government-wide Commission is proposed instead of an interagency taskforce or the like, in order to expressly grant it executive authorities. The interagency mechanisms generally lack such authorities and must act by the accumulation of independent decisions, rather than the act of one.

[2] The Interagency Committee has examined how it might save on transaction costs for EBT if it were to establish some government-wide processes. However, it lacks authority to enact them. The Commission would presumably have such authority.

[3] For more discussion on some of these issues see : *Electronic Benefit Transfer in the Food Stamp Program*, USDA, March 1992, pages 19-22.

Case Study: Consumer Information Center — A Potential Application of an Electronic Clearinghouse

In our survey the most highly valued application of electronic service delivery was the "information clearinghouse." A clearinghouse may serve the client of federal programs in several ways. First, it may serve them directly, offering an electronic connection to information, communication and transactions. Or, more transparently, as a utility, it may facilitate the output and dissemination of information to them. Second, it may serve the public indirectly by assisting state and local administrators of federal programs who in turn utilize the clearinghouse as a resource of information, communication and transactions with federal agencies.

Such a clearinghouse may fulfill several functional purposes that are currently lacking:

- an interagency directory service (for locating information resources and other resources)
- an interagency repository for the sharing and exchange of information and resources
- a multi-channeled utility for electronic dissemination of information, featuring online, fax, audiotex and other output—permitting both broadcasting and retrieval—linking federal agencies to both commercial and public outlets, such as public libraries, commercial online services, and community bulletin boards
- a common electronic communications

Background: Consumer Information Center

The Consumer Information Center (CIC) was established in 1970 by Executive Order to help Federal agencies and departments develop, promote and distribute consumer information to the public. While CIC recognized by Congress as a separately funded activity, requesting its annual operating fund from the Congress independently, it has not been constituted by statute as an independent agency of the federal government. Its operations are located in the U.S. General Services Administration, and it receives administrative support from them. It is under the "policy guidance" of the Special Adviser to the President for Consumer Affairs.

The CIC is the central source for consumer booklets from 53 Federal Departments and agencies. It disseminates more than 11 million publications annually through its famous Pueblo Colorado fulfillment center. The publications are promoted in a unitary catalog that is issued quarterly for free to consumers and by other promotional strategies. By combining them in a common program, the CIC provides cost-effective fulfillment, promotion and distribution services for the Federal Departments and agencies, and over 300 of the most popular federal publications available.

The primary means of promotion is the *Consumer Information Catalog*, published four times a year; about 16 million copies are distributed annually. Each issue features about 200 booklets from a variety of Federal agencies, descriptively listed, that the consumer may obtain for free or low cost . The publications cover health, federal benefits, money management, housing, child care, employment, small business, education, food and nutrition, consumer protection, and more. The *Catalog* is made available through schools, libraries, consumer groups, Federal offices with large numbers of visitors, congressional offices, and in response to individual requests. CIC also provides a free publication, *Lista de Publicaciones Federales en Español para el Consumidor*, listing those Federal consumer publications available in Spanish.

The Catalog offers publications in three price categories. *Free booklets* are the mainstay of the CIC: the sponsoring agency prints booklets, provides copies, and pays for distribution related costs *Low priced-publications (LPP)* are brief, small publications generally weighing less than four ounces. The sponsoring agency prints and provides copies to CIC and the consumer pays 50 cents to cover postage and handling costs. *Sales booklets* are distributed for the sponsoring agency after the booklet is turned over to the Superintendent of Documents of the U.S. Government Printing Office for printing and inclusion in the GPO sales program. GPO sets the price to cover the cost of printing copies, as well as postage and handling costs.

The majority of booklets listed in the *Consumer Information Catalog* are developed and paid for by Federal agencies. However, as budget constraints have required innovations, the *Catalog* now also includes publications produced jointly by government and private industry, typically sharing information and resources from both sponsoring organizations and generally offered free of charge or for 50¢ to consumers.

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switch, providing gateways or throughput for agency e-mail systems, and both interagency and intra-agency "bulletin boards"

Not all functions need be served by any one clearinghouse; indeed, there may be advantages for their concentration in separate utilities. The important point is : central federal facilities for interagency or government-wide applications of these kinds is highly desired by federal agencies.

No such clearinghouse now exists. Each individual federal agency generally develops its own capacities for electronic service delivery, in the same way that it has always procured computer systems in the past. This may be distinguished from the way in which telecommunications systems and publishing capacities have been developed. Here, recognizing the economies of scale, as well as fortuitous coincidence of historical facts, interagency cooperation and government-wide initiatives have created some common resources—the FTS system, the Government Printing Office, the National Technical Information Service, and so on.

But these examples of interagency or government-wide resources raise questions to beg the assumption: is it really cost-effective, is it really useful, to share such resources? Or may the individual agencies provide such functions for themselves by other means, including contract? Might not such individual applications also be more responsive to their requirements?

Such questions can only be answered by judging the trade-off of costs to the that of value received. In the case of the FTS, the value is presumed to be savings in costs—for with the transparent switching of modern telecommunication, the argument for efficiencies and ease are lost. For the case of the GPO, a major advantage may also be cost savings, though often the federal agencies find that GPO's publishing services are not competitive with their in-house costs or contractors. But the other value of GPO is its sales program and regional depository program which unifies federal publications for national dissemination and broad consumer access. Here GPO performs a service of promotion, merchandising, distribution and fulfillment, as well as printing. In a similar way, the NTIS adds value over individual agency repositories and dissemination services. But if it is true that the individual agencies found it costly and labor-intensive to fulfill requests for its technical documents, the NTIS has also found it so. The NTIS must assess high fees for fulfillment to offset those costs, casting some doubt on the consumer value of the fulfillment. Agencies and other sources indeed may fulfill those same requests at a fraction of the fee or for free, and consumers seeking such documents are often able to locate those sources. The NTIS indeed is losing business, even as its inventory (and hence its costs) grow, and since by statute it must recoup its costs from its sales, its prices must rise and thus it is made even more uncompetitive in the consumer market over time.

This overview of cross-agency resources illustrates the values that any electronic clearinghouse in the federal government must address:

- value to consumer or client: in terms of price, convenience and satisfaction, is it the best value?
- value to provider or service agency: in terms of efficiency, costs and effectiveness of delivery, is it the best value?

This brief case study will address the application of the clearinghouse concept to the dissemination of consumer information. It will examine the current services and describe the ways in which it might be significantly enhanced by electronic dissemination, specifically a central clearinghouse. It will examine some of the efforts now underway to fulfill that function and consider what is required for a successful implementation. The case study will not fully examine the costs of such a clearinghouse. However, the implementation can be scaled in costs or requirements; it can be implemented

effectively by gradual development with incremental goals.

Consumer Information and Current Distribution

The term "consumer information" is ambiguous. Virtually all federal agencies have some "consumer" information requirements in the sense that they serve "consumers" of their own services, and some of these (such as the Social Security Administration and the Internal Revenue Service) affect virtually all citizens . Information about them, therefore, is reasonably included within the definition here.

In the more narrow and traditional sense, consumer information refers to that which assists "consumption" of goods and services in the marketplace. Here a surprisingly a large number of federal agencies serve the public:

- the Health Care Finance Administration collects and disseminates information on the performance of health care providers
- the Public Health Service collects and disseminates information of personal health care as well as public health care issues
- the Center for Disease Control and Prevention has a similar mission with respect to disease, toxic substances and other health care risks
- the National Institutes of Health — especially the individual units on mental health, alcohol and drug abuse, heart and lung, cancer — all have programs to advise the public on health matters
- the Environmental Protection Agency promulgates information on consumer products that may harm themselves and the environment
- the Consumer Product Safety Commission has the broadest mission to develop information and promulgate it on product safety generally
- the Food and Drug Administration issues advisories on drug and medical device safety and precautions which are recommended for consumers
- the National Transportation and Highway Commission advises consumers about safety of cars and tires and their performance
- the Federal Trade Commission educates the public about consumer fraud
- the Department of Agriculture through its Extension Service and other activities provides consumers information about nutrition, gardening and other domestic activities
- the Food Safety and Inspection Service (USDA) warns consumers about contaminated food products

These are just a few of the most notable. Information is also available about virtually all aspects of the economy with which a person may interact —employment matters, mortgages and house buying, pensions, banking, securities — provided by individual federal agencies whose missions and program objectives include informing the public, not just as a right to know, but to effect change in consumption and thereby modify the marketplace or protect the consumer or both.

Information for consumers is distributed in publications, news releases, and media products (such as radio and TV public service announcement and video news releases). Consumer publications are distributed by the various agencies by their own offices, through fulfillment centers which they manage (some under private-sector contract), through GPO sales and through the Consumer Information Center. Some channels of redistribution also exist: agencies use public libraries, schools, local and state government, businesses and employers, and the voluntary sector for public outlets.

Changes in Federal Consumer Information Policy—Decline in Public Access

Since 1982 government-wide policy and general budget limitations have combined to substantially reduce the availability and distribution of government publications. Overall, according to the American Library Association, 1 in 4 government publications have been eliminated.[1] A large number of the lost titles were consumer publications. The CIC reports that many consumer publications which used to be disseminated by them have gone out of print or the agencies have ceased to support their dissemination because of budgetary reasons. In other cases, the CIC reports, the publications still exist but are no longer promoted and are disseminated only upon request.

While some decline may be attributed to general budgetary reduction, the major impetus for publication reduction and the cut back in dissemination was policy of the Reagan administration. As a part of his Reform '88 initiatives which sought to reduce government spending and eliminate "waste" and inefficiencies, President Reagan imposed a moratorium of federal spending on all new publications. The Office of Management and Budget subsequently issued OMB circular 81-16 (dated 4/21/81), calling upon all federal agencies to "eliminate unnecessary federal spending for the development and printing of periodicals and pamphlets and for the production or procurement of audiovisual products." A comprehensive review was undertaken by each agency of all its publications and each was instructed expressly to eliminate publications in accordance with explicit goals. By October, 1982, OMB announced, its initiatives had eliminated 1,998 of the 12,217 titles then published by federal agencies. Most of these cuts came from consumer-oriented publications of the Department of Agriculture (955). By January, 1984 OMB said they had eliminated 3,850 titles (out of an inventory that now was counted at 15,000). As reported by OMB and the media at the time, the titles included pamphlets about government programs such as Social Security, Veterans benefits, and Food Stamps, but also a wide variety of consumer subjects; some offered as examples of foolish expenditures, others offered to illustrate the loss of valued information:

- "How to Buy Eggs"
- "How to Control Bed Bugs"
- "Growing Ornamentals in Urban Gardens"
- "Erosion Control on Forest Land"
- "Smoking and Health"
- "Hazardous Materials Handling"
- "Occupational Outlook for College Grads"
- "Women's Concerns" (a pamphlet of the Department of Labor)
- "How to Buy a Christmas Tree"
- "How to Have a Sparkling Clean Sink"
- "Skin Cancer"
- "Hot Springs Bathing Instructions"
- "How to Buy Economically: A Food Buyers Guide"
- "Home Food Preservation",
- "Your Housing Rights", a 200,000 copy pamphlet, published annually by HUD
- "Worried About Agent Orange", a 600,000 copy publication of the VA

An additional 3,400 publications had their printing, promotion or distribution cutback. By 1982 OMB reported cutting 70 million copies. By 1984 it reported having cut 155 million. The Department of Health and Human Services alone cut back from 400 titles to 98, reducing annual volume from 2.5 million copies to .5 million. The Consumer Product Safety Commission cut its printing budget in half.

In a related initiative, the OMB reduced the capacity to print and fulfill; they reported 229 facilities to be eliminated in 1984, cutting 2,000 personnel positions. OMB also

[1] "Less Access to Less Information by and about the US Government", American Library Association, ALA Washington Office, June 1992

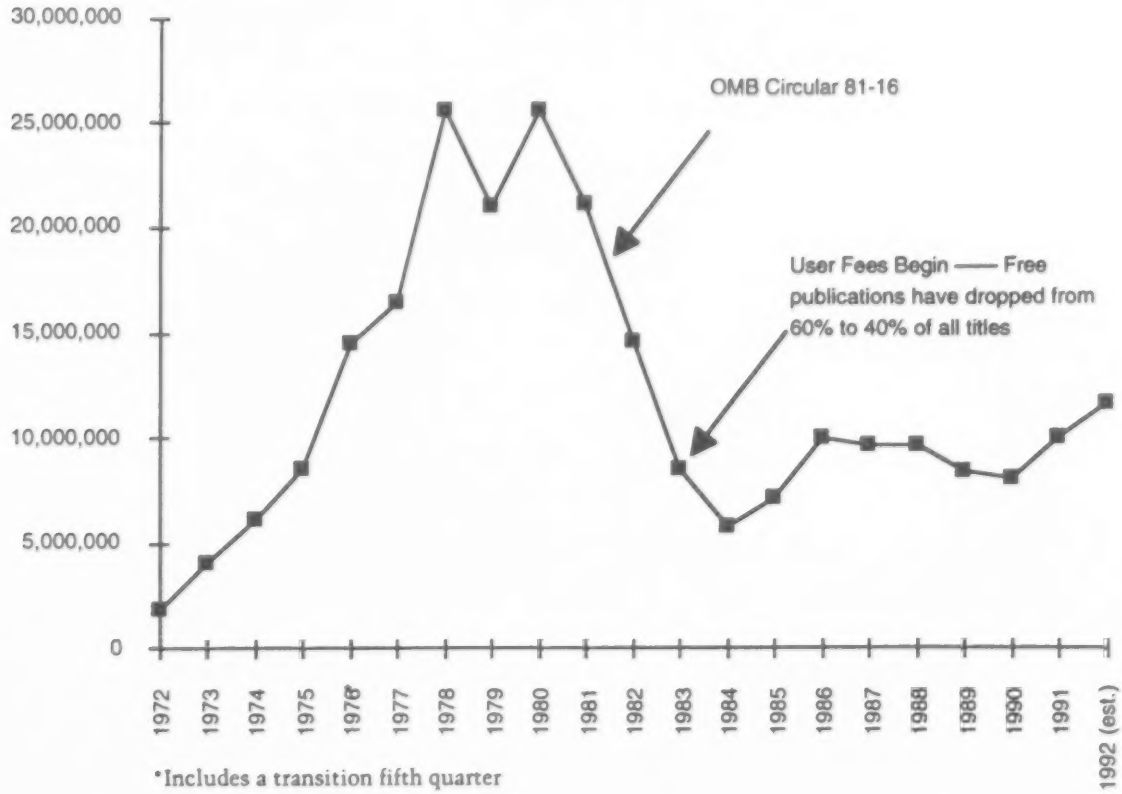
mandated that "user fees" be assessed, subsidies eliminated and prices of publications increased.

Consumer Information Center

No federal agency was affected more by these changes in policy than the Consumer Information Center. Founded in 1970 by Executive Order, the CIC expressly exists to disseminate public information literature. Historically its mission has been to provide a one-stop service for government pamphlets, especially consumer information, which is intentionally free of charge to ensure a wide popular distribution— a function unique to it and unlike that of the Government Printing Office or NTIS, the other government-wide information services, which are required by statute to operate for profit or total cost recovery.

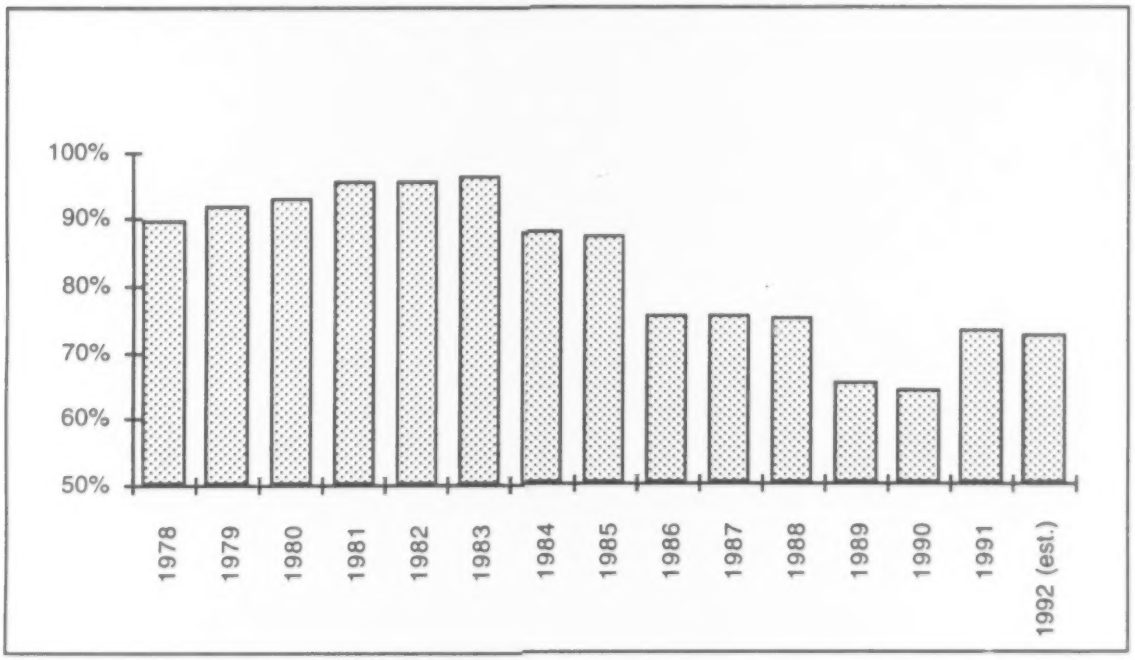
These changes dramatically and adversely affected dissemination of consumer information, and the ability of the federal agencies to disseminate it. At the time that OMB Circular 81-16 took effect about 60% of the titles in the *Consumer Information Catalog*, published quarterly, were free. By 1984 the number of free publications had dropped to 40%. The number of publications distributed by the CIC plunged from 25.6 million in 1980 to 5.8 million in 1984.

Chart 12 **History of CIC Dissemination, Numbers of Publications Distributed Annually (1972-1992)**



*Includes a transition fifth quarter

Chart 13 Percentage of Free Publications in CIC Annual Distribution



There were several factors in this decline. The immediate drop in the years 1982 and 1983 was the result of OMB Circular 81-16: the elimination of many titles and the policy to increase the price of the titles. Many popular publications that agencies used to disseminate free to the public through the CIC—some of which are cited above—were suddenly eliminated, discouraging and disrupting consumer demand. In the 1982 Spring issue of the *Catalog* a large number of orders were only partially fulfilled because stock was unavailable; about 12% of the titles had been underwritten by USDA which had aggressively cut their publications, virtually all of these titles were unexpectedly out-of-stock to demand and eventually eliminated.

In general over the next three years, the proportion of free publications available in the *Catalog* declined: compared to about 120-140 free titles per *Catalog* in previous years, after the changed policy there were 70-90. In addition, prices of sale publications—now the majority of the *Catalog*—were substantially increased, in response to OMB Circular 81-16 to make government publications more "profitable" and less costly to publish. The total sales value (price) of all the items in the 1980 *Catalogs* was $129-150. After the policy shift toward paid publications and away from free dissemination, the sales value of the items in the *Catalogs* jumped to $436 (Summer, 1983), precisely at the lowest point of CIC dissemination and sales. Since 1983-4, the overall sales value of the titles in the *Catalog* has steadily declined, reflecting the increasing role of smaller and cheaper publications and the "market forces" at play, consumers choosing not to pay for government information that they consider priced too high: the sales value of items in the Fall 1992 *Catalog* was only $96.

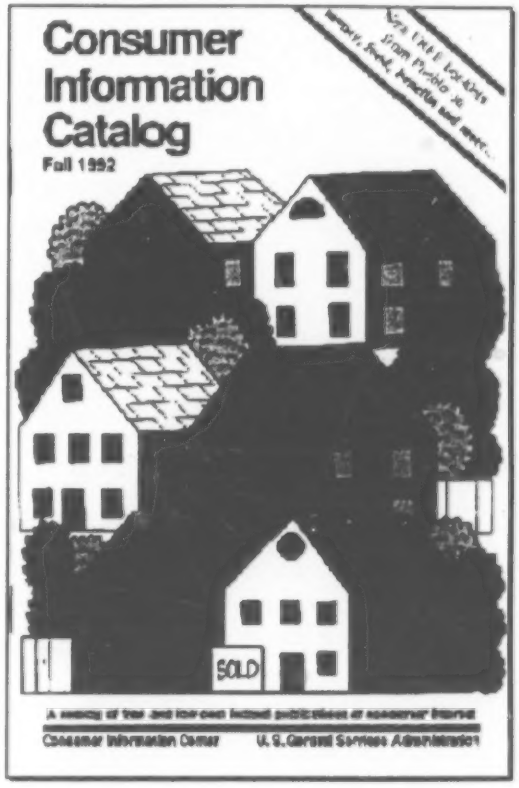
Finally, the decline in demand of CIC publications can also be attributed in part to the imposition of a new user fee—$1 for each order—that was also initiated at this same time (1983). Though modest, it also discouraged demand, coming as it did upon the expectation that the publications were free.

The CIC adjusted to the changes in policies and consumer reaction with several innovations. To offset the loss of titles because of agency inability to pay for them, they began a successful program of public-private partnerships to develop and underwrite the cost of consumer booklets. Each year new booklets become available only because of their program to promote such partnerships. In 1991 these included: "How To Be Credit Smart" (a joint product of the American Financial Services Association and the USDA); "Facts About Financial Planners" (a joint product of the American Association of Retired Persons and the FTC);"On The Move" (a product of the American Movers Conference and the Interstate Commerce Commission); and others. To date, these partnerships have resulted in 77 publications added to the CIC program with over 8.6 million copies distributed.

In order to offset costs of fulfillment to agencies, they initiated a program of "low price publications" (LPP) which the consumer may purchase for 50¢. Currently LPP items have grown in the *Catalog* to about 1/3 of the titles, displacing the more expensive "sales" items that consumers tend to eschew. Free items, after taking a tumble in the early 1980s, have maintained a fairly steady proportion of total orders.

The volume of consumption has been restored somewhat by the addition of lower cost items. It has grown back up to about 11.6 million publications, but it is still well below the 25 million peak of 1980 and far below the projections of 35-40 million annually which the CIC had anticipated for the decade, based on its historical growth in demand.

Promotion of the *Catalog* and the consumer publications that it advertises has been as vigorous as ever; the number of *Catalogs* distributed to the public has remained fairly constant at about16 million per year (though down somewhat from 20-22 million per year during the peaks in 1978-1980). Decline of orders does not seem due to the lack of promotion.



Consumer Information Catalog is printed quarterly. It is offered free of charge. 16 million copies are distributed every year.

The total percentage of publications ordered for free *versus* those ordered for a price has always been high, and remains so. Free items remain the primary value of the CIC fulfillment and its primary product. Hence the loss of free titles, the decline of their quality, and the replacement of free items by priced items have been the major cause of the decline of orders .

Low-priced publications have only partially boost consumption. Without increasing the quantity and quality of the free distribution, the CIC will continue to have diminished distribution; the dissemination of consumer information and the program objectives of that dissemination will likewise be hampered.

What impact has this had upon the federal government and the clients it serves?

Innovations for Federal Service

The CIC should be understood as a powerful channel of distribution of public information, and an extension of federal programs that utilize public information to advance their mission and achieve material results. The core service and strategic value of the CIC is symbolized by its *Catalog*—a mechanism to reach the citizens that seek the information the federal government wishes to provide. This mechanism represents a self-selecting market—meaning the consumer is identified by himself as a customer for the information and selects the item as a want arose. In contrast, the public broadcast of information or the mass-mailing or drop of publications reaches many more that do not want or need the information than who do. The CIC provides a mechanism that federal information can be assured to reach its intended audience, much more than that blind broadcast. It is inherently more cost-effective. It is fundamentally more efficient.

Absent such a mechanism and the service which the CIC provides—fulfillment and also promotion, with the high consumer recognition that the CIC has cultivated—the objective of much federal consumer information cannot be met. In turn federal programs themselves are adversely affected: eligible veterans and seniors do not receive benefits about which they do not know; the societal benefits of preventative health programs (such as reduced health care costs) cannot be achieved without massive public education; market-based sanctions against unwanted business practices or dissuading consumption not in the public interest will falter without an informed consumer.

The impetus of OMB 81-16, coming as it did within the province of the Reform '88 initiative of OMB and subsequently assumed by the President's Council on Integrity and Efficiency, was strictly cost-reduction; it expressly disregarded program values except those that were required by statute; that information by publications or other media had program values such as those cited above was not a factor under consideration.

Table 15 Federal Agencies Served by the CIC

ACTION
Architectural and Transportation Barriers Compliance Board
Centers for Disease Control
Commodity Futures Trading Commission
Consumer Product Safety Commission
Department of Agriculture (USDA)—Extension Service
Department of Commerce
Department of Defense
Department of Education
Department of Energy
Department of Housing and Urban Development
Department of Justice
Department of Labor
Department of State
Department of the Interior
Department of the Treasury
Department of Transportation
Department of Veterans Affairs
Environmental Protection Agency
Family Support Administration
Federal Communications Commission
Federal Deposit Insurance Corporation
Federal Emergency Management Agency
Federal Maritime Commission
Federal Reserve System
Federal Trade Commission
Food and Drug Administration
General Services Administration
Health Care Financing Administration
Interstate Commerce Commission
Library of Congress
National Aeronautics and Space Administration
National Archives and Records Administration
National Credit Union Administration
National Endowment for the Arts
National Endowment for the Humanities
National Institute of Mental Health
National Institutes of Health
National Science Foundation
Office of Personnel Management
Office of Technology Assessment
Office of Thrift Supervision
Peace Corps
Securities and Exchange Commission
Selective Service System
Small Business Administration
Smithsonian Institution
Social Security Administration
U.S. Forest Service
U.S. Information Agency
U.S. Office of Consumer Affairs
U.S. Postal Service
USDA Food Safety and Inspection Service
USDA Human Nutrition Information Service

Electronic Delivery Services for Consumer Information

Costs of publication and printed dissemination are high, and budgetary constraints upon federal agencies will likely remain the critical consideration in program planning, development and implementation.

Electronic dissemination, in conjunction with the current program, can facilitate a dramatic expansion of distribution, potentially reaching millions of consumers through public libraries, homes, schools, and employers through on-line and fax connection.

We want to emphasize: the use of electronic dissemination cannot and should not replace the distribution of printed publications. Quite the contrary, it is meant to enhance it—by adding online order-entry from public access points such as public libraries, or from personal accounts from online commercial services or BBS's; by furthering the distribution of the *Catalog* over online systems and BBS's; by increasing promotion and awareness of the CIC and its products generally.

But it is also true that electronic dissemination can multiply dissemination of the publications themselves—it can increase that distribution by an order of magnitude at very small costs. A publication that is now distributed by print-and-post could also be "posted" to the Fidonet or Usenet, reaching up to 50,000 BBS systems in communities across the nation, serving up to 10,000,000 users by one recent estimate. Or such publications could be "acquired" electronically by the nation's public libraries and printed upon demand or maintained as an electronic file for the 122 million patrons that they serve.

An *electronic* Consumer Information Center would not be limited to the 200 or so titles that can be printed within the space of a 16-page quarterly *Catalog*. Replication of electronic products and their proliferation across public computer networks and BBS would further multiply distribution. Both the number of titles and the number of distributors would greatly expand with the application of electronic dissemination.

Because the electronic service must preserve the objective of free or low-cost access, the service must avoid returning costs to consumers for access or fulfillment. There are several ways to do this—the partnerships with public libraries, the use of Usenet, Fidonet and other BBS networks or distributions. But direct access by consumers is also feasible through fee-based transmissions—where the federal agencies pay the costs of telecommunications in the same way that they may pay the costs of print-and-post. Fulfillment by fax or on-line connection can be accounted for and charged to the agency in much the same way that fulfillment services are accounted for, as per items costs are charged back.

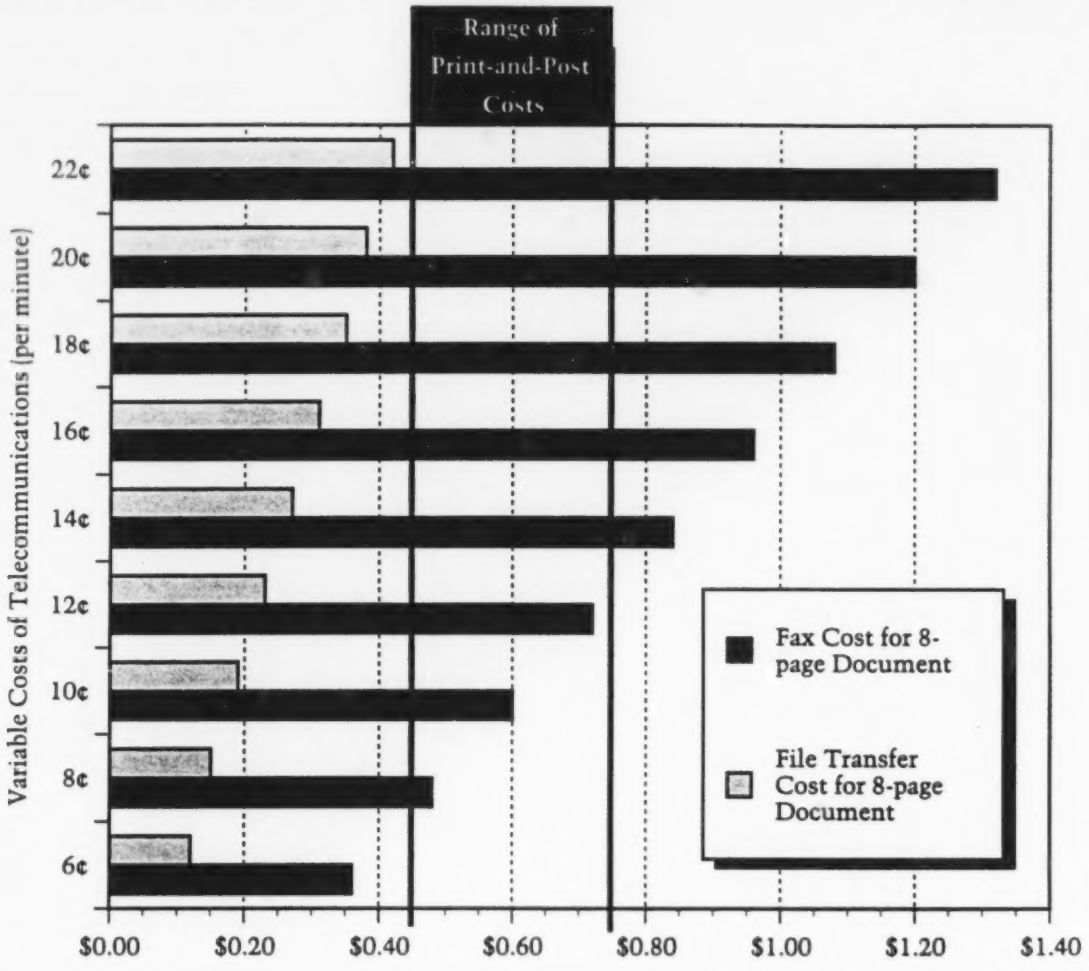
It is important to recognize that costs of electronic delivery are not always less than print-and-post. While the costs of publishing vary with various qualities of the printing (with the cheapest jobs as low as 1/3¢ per page and photocopies as much as 4¢ per page), electronic delivery costs also vary with the telecommunications which can be as low as 6¢ per minute (FTS) and as high as 22¢ per minute (commercial long distance).

Even allowing for the additional costs of labor and postage[1], the electronic delivery of documents is not always cheaper than printing and mailing the item. As Chart 14 illustrates, while a file transfer is almost always cheaper than print-and-post, fax dissemination is only cost-effective when telecommunications is at the rate of 6¢ to 12¢ per minute.

Because only a minority of the US population has computers or fax equipment at home, a program of public access and redistribution would be required. The utilization of the public libraries for this purpose is already documented. Other

[1] The baseline cost for handling and postage for the CIC is 42¢ per item. That is used here for the estimate in Chart 14. Actual agency experiences, where the mailing operation is typically not as efficient, may be higher.

Chart 14 Comparing Costs of Fulfillment—Fax versus File Transfer versus Print-and-Post



distributors may include local government and community Bulletin Boards, employers, schools, and other organizations which may electronically rebroadcast or print the *Catalog* and the titles of the CIC for their clientele .

An electronic CIC would redefine the nature of the information it provides. The form and limitations of published media may be abandoned. News and messages may become their products as well as booklets, making it possible to include timely notice of product recalls and warnings in addition to its other services.[1]

A large number of CIC's current customers would use an electronic access. About 20% of consumers who order from *Catalogs* found those *Catalogs* at their public libraries, where an electronic CIC could permit direct on-line *Catalog* orders. Thirty-one percent of all CIC customers (responding

[1] Recall notices are currently issued by eight different agencies utilizing their own channels of distribution. There is no common clearinghouse for recall notices or consumer advisories.

to its most recent customer satisfaction survey) have use of home computers and, of these, half use Bulletin Boards or commercial on-line services. For these, and for a growing number of Americans, an electronic CIC may add convenience to access the service as well as alternative fulfillment. This improved access, especially the availability of direct orders to the Catalog sales by on-line transaction, will increase the orders for print-and-post fulfillment as well. We may expect a substantial increase—perhaps by a magnitude of 10-20%—but a marketing study would be required to assure this.

Current Government Electronic Dissemination Programs

GPO has advanced a "strategic plan" to employ more electronic dissemination in its publication programs. Entitled *GPO/2001:Vision for a New Millennium*, the plan calls for online access to the *Congressional Record* by 1993 and the expansion of electronic products generally, including online access to other databases and products, more CD-Rom and other data media publication, and satellite dissemination of publications to the Regional Depositories on at least a daily basis.

Some elements of the plan have been already implemented. A GPO bulletin board was placed in service in the summer of 1992. While still very limited in the scope of its publications, it offers public access to a variety of documents and file transfers for a fee . The service uses rather commonplace BBS design without the more advanced full-text database capacities that the newer generation on-line systems provide and moreover lacks true bibliographical database features that might be expected from a publisher and a repository of documents. It structures the fees for online retrieval of documents (or downloads) upon a sliding scale—from $2 for a 50k of data to $18 for a megabyte. Since users dial in to the service directly and therefore assume their own telecommunications charges, the cost of maintaining the systems are low. The marketing of this online fulfillment, at such a high consumer cost, suggests that the online service is deliberately priced to avoid "unfair" competition with print-copy fulfillment, which of course represents the lion's share of GPO sales and revenues.

NTIS has also embarked upon a "modernization", though not so fully assessed as a strategic plan with evaluation of customers and services as has GPO. Their plan begins with a sober recognition that as an old-fashioned archive and fulfillment center, its prime is past:

> "NTIS is in a difficult business position. It depends heavily on the sale of printed technical reports for its livelihood, and as the movement toward electronic information distribution grows, that segment of the information market will slowly decline. In fact, NTIS' share of the information market has been declining for several years. For a time the Agency operated at a loss and borrowed from prepaid customer accounts to cover operating expenses. By reducing expenses, largely through staff reductions, NTIS has stabilized somewhat and at present is earning a small profit, but there are essentially no reserves and the Agency is saddled with debt that is large compared with its earnings capacity. NTIS' long term success will require development of new products and services to augment and eventually to replace the income from printed reports..... It is not certain, however, that this will happen quickly enough to avoid further financial crisis."

NTIS is suggested by some to represent the limitations of print-on-demand. But its technology does not utilize the more advanced imaging and electronic publishing capacities, employing microfilm for most of its storage and retrieval. The modernization of the NTIS will require a capital investment that cannot be recouped entirely from sales without worsening the adverse pricing that has plagued the service.

Competing for the new electronic services, NTIS has begun to change its marketing strategies. It already recognizes that its most popular products are electronic databases and plans to expand and promote that product line. In October, 1992 it launched its own BBS service, called the Fed World. This service operates on off-the-shelf BBS software and is offered free to the public at a

Washington-area dial-in number. It provides access to lists of NTIS publications, many of which can be retrieved on-line by file transfer. Like the GPO system, it does not offer full-text or bibliographic databases to its publications.

NTIS Fed World, responding to Congressional and public interests, has also created a gateway to other federal BBS in the Washington-area. Currently 62 BBS are accessible through Fed World which outdials for the user to these other services, and connects and maintains connection through its ports. When the user signs off the remote BBS, he automatically re-enters Fed World. The advantages of the gateway are mixed: while it permits some ease of navigation to locate them, the committed user of a federal BBS will dial it directly, especially where (as in the case of the SBA public BBS) the dial-in is by 800 number and so the user can avoid telecommunications charges.

It remains to be seen whether the NTIS dissemination via Fed World is effective and whether it aids printed sales which are its revenue mainstay. Promotion of the Fed World, and generally all federal BBS, has been lacking.

Neither the GPO nor the NTIS possess the mission of free public dissemination to the degree or purpose of the CIC. While GPO's regional depository program provides no-cost or low cost distribution of government publications of high value, it is a narrow program and one that is characteristic of the era before electronic information. It is increasingly not cost-effective for the GPO to distribute the publications nor for the depositories to store and catalog them. Changes to the program are anticipated, including electronic dissemination.

The Future of the Consumer Information Center

Large scale consumer information dissemination will remain the domain and mission of the CIC. Any effort to utilize electronic dissemination for consumer information should reinforce the CIC, rather than compete against or replace it. First, the CIC has developed the consumer recognition for information dissemination with over two decades of household penetration. It has established effective relations with media and public libraries and other distributors of public information by which to maintain and reinforce that recognition. Second, it has established relationships with federal and other information providers and has proven its value to them by a variety of services to assist the design, promotion, distribution, and fulfillment of public information.

Federal agencies are experimenting with electronic dissemination, as our survey found, and these experiments will grow into services. They recognize the value of central facilities for electronic dissemination and they are prepared to utilize such facilities, as indicated by their use of the CIC's current program.

The CIC may greatly improve its own distribution and provide new resources for the agencies that it serves if it develops the capacity for electronic delivery as described in this case study. However, as it is presently constituted, the CIC is essentially a staff operation. It receives no capital budget with its operating fund; it has no facilities that it directly manages. The Pueblo facility is operated by GPO and, though 95% of its business is the CIC, it is not directly supervised by them. As a result, technological improvements and enhancements to the facility are not within its control.

To enable the CIC to fully utilize the benefits of electronic delivery of consumer information, the CIC should be established as an independent federal agency and permitted the necessary budget authorities and capital investments to fulfill its mission. Such a change need not alter the relationships that it currently has with GPO or GSA, both of which provide supporting administrative services. The independence of the CIC, however, would facilitate realization of technological advances required for this new role. Absent this change, it may be expected that the CIC requirements must be surrogate to those of GPO and GSA, as they have been in the past.

> "Infrastructure has traditionally been the responsibility of federal and state governments. Investing in infrastructure means more than repairing bridges, harbors and highways. Today, the United States faces a new series of communications, transportation and environmental needs for the 21st century. The creation of a 21st century infrastructure program would serve as a critical technology driver for the nation. It would stimulate major new national R&D efforts; create large, predictable markets that would prompt significant private sector investments; and create millions of new jobs.
>
> "A 21st century infrastructure would address many practical problems. For example, the government can serve as a catalyst for the private sector development of an advanced national communications network, which would help companies collaborate on research and design for advanced manufacturing; allow doctors across the country to access leading medical expertise; put immense educational resources at the fingertips of American teachers and students; open new avenues for disabled people to do things they can't do today; provide technical information to small businesses; and make telecommuting much easier. Such a network could do for the productivity of individuals at their places of work and learning what the interstate highway of the 1950s did for the productivity of the nation's travel and distribution system."
>
> ***—A Technology Policy For America*, President Bill Clinton (September, 1991)**

Summary Conclusions and Policy Options for Congress

The survey and case-studies conducted for these studies present some general findings:

- Electronic delivery of public services are an integral and growing part of federal government today.
- Innovations are wide-spread; some agencies are aggressively expanding and redefining their services by the application of electronic delivery.
- Demands for efficiencies and cost-savings are driving these innovations and redefinitions, so too are the opportunities of the technology itself, offering options not otherwise available.
- Electronic service delivery represents both alternatives or replacements to current delivery and wholly new services in themselves.

We have also recognized that the large-scale application of electronic delivery suggests that:

- Government-wide utilities may be more cost-effective than those of individual agencies and, in addition to economies of scale, they offer opportunities to coordinate services, even as data and transactions may be coordinated;
- Such large-scale utilities also benefit by the participation and cooperation of state and local government, the private sector and the voluntary sector.

We found such partnerships and interagency activities in current service delivery plans and activities of federal agencies.

- The Consumer Information Center engages the voluntary sector to assist federal agencies to develop and disseminate consumer information.
- The Social Security Administration has given priority to developing systems that will permit more interagency applications and broader services to their clientele, including information and assistance that pertains to non-SSA programs
- EBT is advancing, in spite of cost and other barriers and inefficiencies, largely because of interagency support and initiatives, including partnerships between federal and state and local government

We found such partnerships can enhance these and other service delivery plans.

- Especially, we found that an electronic benefit transfer network, a public information clearinghouse, and health care networking all require commitment and cooperation across many agencies to be fully effective and economical, and

that they should have dedicated investments and central management.

- Public libraries are integral to public information dissemination.
- Commercial interests are crucial stakeholders in the establishment of an EBT network and their partnership will benefit the network's cost-effectiveness.

Our case studies revealed the value of strategic planning at the agency-level for the successful development of electronic service delivery, but found planning frustrated by government-wide and Congressional policies, and a lack of support.

- Budget reductions and limitations have constrained innovation and have compelled service delivery changes and developments that are more expedient that strategic.
- Public information programs do not employ electronic delivery effectively; OMB policies on publications and information discourage dissemination and generally views electronic delivery more as an added burden than as an alternative or new opportunity with public policy value.
- Congressional constraints on GPO and NTIS, regarding sales programs and depository programs, are outmoded for electronic dissemination; however, at the same time, broadcasting federal publications electronically or distributing them to new "electronic depositories" is not a function now within the mission of any federal agency; none has either the technological capacities, or the requisite technical expertise (which are more akin to library sciences than publishing).
- The lack of status for the Consumer Information Center, as the only federal agency dedicated to public information dissemination, frustrates its ability to acquire and apply new technologies.
- Typically, federal agencies are independently developing service delivery innovations and technologies; in many cases (for example, kiosk technologies) the agencies are unaware of the plans and activities of each other, and may duplicate development and resources.

Based on these findings and the specific conclusions found throughout this report, we believe that a Congressional policy on electronic service delivery should be developed that seeks to encourage and promote innovations and the redefinition of service delivery by several concrete steps:

1. Model, pilot and establish such central facilities and utilities as would promote electronic delivery, including, but not limited to an EBT network for government -wide application, a public information clearinghouse, and health care networking applications; such facilities and utilities may require the establishment of new federal agencies to execute these missions, as in the case of EBT, or may require reorganization of existing agencies and activities. In this regard we specifically recommend:
   - — The Consumer Information Center should be established as an independent Federal agency and its mission expressly expanded to include electronic dissemination; and
   - — A Commission for EBT/EFT should be established as a government-wide service.
2. Establish a technology laboratory for electronic delivery services, and other innovations in the application of telecommunications and information technology, which may test and evaluate applications for federal agencies and state and local government, on a reimbursable basis, and conduct independent research and experiments with such technologies, and serve as a technical resource and clearinghouse to federal agencies; such a laboratory may be established as quasi-public corporation, with joint interests and investments of technological industries, dedicated to interpersonal technologies which may have commercial as well as public-interest value.

3. Establish a unified planning process for federal agencies, requiring the integration of existing statutory planning processes (such as budgets, information and resource management, and others), and requiring that such plans incorporate service delivery plans; such unified plans to be submitted annually to the Congress in conjunction with annual requests for appropriations

In establishing a technology laboratory or other common facilities and utilities, as described above, the Congress is extending the direction it has undertaken with the authorization of the NREN, and its predecessor NSFnet. These are each examples of investments which have commercial as well as public benefits. However, electronic service delivery will require more than "infrastructure," as this telecommunications backbone is often called; it shall require facilities and support services, potentially operated under contract by the private-sector, but also strong public administration. In this sense, it may be different from the NREN that may evolve into an internet of mixed commercial and public hosts, nodes and points-of-presence, and that may be effectively administered by a cooperative association of interests. These proposed utilities of electronic delivery, because they directly deliver information services or entitlement benefits to federal clients, must remain under the auspices of federal government.